Pennsylvania Turnpike Commission

REQUEST FOR PROPOSALS FOR

Cashless Tolling System Implementation and Maintenance

ISSUING OFFICE

Pennsylvania Turnpike Commission

ETC Operations Department

RFP NUMBER

16-10495-7252

DATE OF ISSUANCE

February 17, 2016

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PART 1 GENERAL INFORMATION FOR PROPOSERS

1.1 Purpose.

This request for proposals (RFP) provides interested Proposers with sufficient information to enable them to prepare and submit Proposals for consideration by the Pennsylvania Turnpike Commission (herein after referred to as "the Commission" or "PTC") to satisfy a need for Cashless Tolling System Implementation and Maintenance Services.

1.2 Issuing Office.

This RFP is issued for the Commission by Electronic Toll Collection (ETC) Systems Technology Group.

1.3 Scope.

This RFP contains instructions governing the Proposals to be submitted and the material to be included therein; a description of the Services to be provided; requirements which must be met to be eligible for consideration; general evaluation criteria; and other requirements to be met by each Proposal. A Procurement Schedule of Events is detailed in Section 1.12 of this RFP. The dates are an estimate and the Commission is not committed to executing the schedule exactly as shown. Any changes to the schedule up to and including the due date for Proposals will be administered through an addendum to this RFP.

1.4 Problem Statement.

Proposers are to provide an efficient, cost-effective, revenue secure Cashless Tolling System that includes Design, development, testing, installation and Maintenance Services for the Cashless Tolling System as further set forth in **Exhibit A Scope of Work**.

The Services include implementation of cashless tolling on the newly constructed Southern Beltway and the conversion of the Findlay Connector to cashless tolling in late 2019, which will be the base Work for this Contract. This will include three (3) locations, six (6) Cashless Toll Zones using an anticipated space frame gantry design.

All potential future facilities listed below will be considered optional additions to this Scope of Work, as will be indicated throughout this document. Full conversion to mainline cashless tolling will occur in phases beginning with mainline pilot test sites and progressing to the various Turnpike highways at dates and locations to be determined.

All other PTC facilities including, but not limited to:

- Mainline Test Sites
- Mainline Turnpike
- Northeast Extension
- Beaver Valley Expressway
- Mon-Fayette Expressway

- Amos K. Hutchinson Bypass
- Others as to be determined (TBD) by PTC

The Cashless Tolling System sought shall use the latest proven technology and shall be able to achieve the functional, technical and performance requirements as further set forth in **Exhibit A Scope of Work.**

In summary the Services shall include:

- All in-lane components and systems at each toll zone;
- Cashless Toll Host system;
- Image transfer and reconciliation with the CSC/VPC system;
- Digital Video Audit System (DVAS);
- Maintenance Online Management System (MOMS);
- Interface to the PTC SAP Financials;
- Interface to the Commission CSC/VPC system;
- Maintenance and Software Support Services;
- Interface to existing PTC monitoring system;
- Interface to existing PTC Toll Host.

The Cashless Tolling System procured under this Contract *does not* include:

- A back office transaction processing system. The required modifications and upgrades at the Commission E-ZPass Customer Service Center/Violations Processing System (CSC/VPC) is being provided under a separate contract; however, the Contractor is expected to interface to the CSC/VPS and provide the necessary coordination with CSC/VPS contractor sufficient to properly integrate, test and operate the back-office video billing system at the PTC CSC/VPC.
- Any cash collection and support and maintenance functionality related to existing toll systems at existing toll plazas, which will continue to be provided by the current contractor.
- The implementation and maintenance of roadway infrastructure including overhead structures/toll gantries, toll equipment building, generators and pavement at the tolling points, which will be provided by others.
- Communications from the toll equipment building to PTC Headquarters which will be provided by the PTC.
- Demolition and removal of those existing toll plazas, which will be provided by others.

For additional details on Contractor responsibilities and those of interfacing third parties please refer to **Exhibit A Scope of Work** and associated attachments.

1.5 Type of Contract.

If a contract is entered into as a result of this RFP, it will be on a fixed fee basis where the amount of payment does not depend on the amount of resources or time expended. A Draft Contract is included in **Exhibit G Draft Contract.** Payments are distributed in two phases: The first phase is the Implementation Phase. The schedule of payments under the Implementation Phase is provided in **Exhibit D Payment Schedule**. This is followed by the Maintenance Phase. The Commission may in its sole discretion undertake negotiations with Proposers whose Proposals as to price and other factors show them to be qualified, responsible, and capable of performing the Work.

1.6 Contractor Integrity Provisions.

Contractor Integrity Provisions will apply to this contract upon award and the awarded vendor may be required to complete a Background Qualifications Questionnaire prior to entering into an Agreement with the Commission and attend annual ethics training provided by the Commission. Proposers can find these two documents on the Commissions website at www.paturnpike.com (Doing Business, General Information, and Integrity Provisions).

Include full disclosure of any potential conflict as described in the State Adverse Interest Act by the prime or any subconsultant. If there is no adverse interest you shall include the following statement: "I have reviewed the State Adverse Interest Statute and determined that there is no adverse interest for anyone on this Agreement team." This information should be included in your transmittal letter/cover page or executive summary.

1.7 Rejection of Proposals.

The Commission reserves the right to reject any and all Proposals received as a result of this request, or to negotiate separately with competing Proposers.

1.8 Subcontracting.

Any use of Subcontractors by a Proposer must be identified in the Proposal as instructed below, including in **Exhibit F-2 List of Subcontractors**. During the Contract period, use of any Subcontractors by the selected Proposer, which were not previously identified in the Proposal, must be Approved in advance in writing by the Commission as set forth in the Contract.

A firm that responds to this solicitation as a prime Proposer may not be included as a designated Subcontractor to another firm that responds to the same solicitation. Further, a prime Proposer shall submit no more than one (1) Proposal to this solicitation. Multiple responses under any of the foregoing situations may cause the rejection of all responses of the firm or firms involved. This does not preclude a firm from being set forth as a designated Subcontractor to more than one prime Proposer responding to the project advertisement.

1.9 Diverse Business Requirements.

Proposer will comply with the DB Requirements as described in **Exhibit I Diverse Business (DB) Requirements**. Details on DB submission requirements are provided in Section 2.5.

1.10 Minimum Experience Requirements.

The Proposer must meet the following minimum requirements with regard to each of Implementation and Maintenance Phases:

- The Proposer shall have successfully completed at least two (2) cashless or open road tolling ORT (or a combination thereof) multi-travel lane system implementation projects. At least one (1) of the two (2) projects shall have been in operation for a minimum of one (1) year at the time of Proposal submission.
- The Proposer also shall have successfully completed at least two (2) cashless tolling or ORT (or a combination thereof) multi-travel lane Maintenance projects. Projects may be currently in operation (Maintenance still being performed) or completed; however, at least one (1) of the two (2) projects shall have been in operation for a minimum of one (1) year at the time of Proposal submission.
- The Commission will consider equivalent experience of firms acquired by the Proposer prior to proposal submission in the event a proposer presents experience based on firm acquisition.

1.11 Incurring Costs.

The Commission is not liable for any costs the Proposer incurs in preparation and submission of its Proposal, in participating in the RFP process or in anticipation of award of Contract.

1.12 Procurement Schedule of Events.

The current Schedule for Key Procurement Dates for this procurement process leading to an award of the Contract is provided in Table 1-1 below. The Commission reserves the right to make changes or alterations to this schedule as the Commission determines is in its best interest. All changes to these dates and/ or times up to and including the due date for Proposals will be issued as an addendum to this RFP and will become part of this RFP and will be posted to the Commission's website at www.paturnpike.com/procurement.

Unless otherwise notified in writing by the Commission, the dates indicated below for submission of items or for other required actions on the part of a Proposer shall constitute absolute deadlines for those activities and failure to fully comply by the time and date stated shall cause a Proposer to be disqualified. All times stated are in Harrisburg, PA local time and are subject to change.

Table1- 1: Key Procurement Dates

ACTIVITY	DATE	TIME
Request for Proposal Issued	February 17, 2016	N/A
Deadline for submission of written questions for the Pre-Proposal Conference	February 29, 2016	5 p.m.
Pre-Proposal Conference	March 2, 2016	1:00 p.m.
Deadline for Proposers to Submit Final Questions	March 16, 2016	1:00 p.m.
Due Date for Proposals	April 13, 2016	2 p.m.
PTC Site Visits of Deployments	TBD	TBD
Oral Clarifications/Presentations	TBD	TBD
Anticipated Notice to Proceed	January 2017	N/A

1.13 Pre-Proposal Conference.

A Pre-Proposal conference will be held at the Commission's Central Administration Building, 700 S. Eisenhower Blvd., Middletown, PA on the date and time provided in Table 1-1 Key Procurement Dates. The purpose of this conference is to clarify any points in the RFP which may not have been clearly understood. Questions should be forwarded prior to the conference to ensure sufficient analysis can be made before an answer is supplied. The Commission does not guarantee that every question submitted will be answered either before or at the Pre-Proposal conference. Written questions shall be submitted by email to RFP-Q@paturnpike.com with **RFP16-10495-7252** in the Subject Line to be received no later than the date and time provided in Section 1.12 Procurement Schedule of Events, Table 1-1 Key Procurement Dates. Proposers shall use the form provided in **Exhibit F-8 Forms** to submit the questions.

In view of the limited facilities available for the conference, it is requested representation be limited to two (2) individuals per Proposer. The Pre-Proposal conference is for information only. Answers furnished during the conference will not be official until verified, in writing, by the Issuing Office. All questions and written answers will be issued as an addendum to and become part of this RFP and will be posted to the Commission's website at www.paturnpike.com/procurement.

1.14 Questions and Answers.

No negotiations, decisions or actions shall be initiated or executed by a Proposer as a result of any oral discussions with any Commission member, employee, consultant/contractor. Written questions may be submitted to clarify any points in the RFP which may not have been clearly understood. Written questions shall be submitted by email to RFP-Q@paturnpike.com with **RFP16-10495-7252** in the

Subject Line to be received no later than the date and time provided in Section 1.12 Procurement Schedule of Events, Table 1-1 Key Procurement Dates. All questions and written answers will be issued as an addendum to and become part of this RFP and will be posted to the Commission's website at www.paturnpike.com/procurement. Proposers shall use the form provided in **Exhibit F-8 Forms** to submit the questions.

1.15 Addenda to the RFP.

If it becomes necessary to revise any part of this RFP before the Proposal response date, addenda will be posted to the Commission's website at www.paturnpike.com/procurement under the original RFP document name and number (Cashless Tolling System Implementation and Maintenance / **RFP16-10495-7252**). It is the responsibility of the Proposer to periodically check the website for any new information or addenda to the RFP.

The Commission may revise a published advertisement through an addendum. If the Commission revises a published advertisement less than ten (10) days before the RFP due date, the due date will be extended to maintain the minimum ten-day advertisement duration if the revision alters the project scope or selection criteria. Firms are responsible to monitor advertisements/addenda to ensure the submitted Proposal complies with any changes in the published advertisement.

1.16 Response.

To be considered, Proposals must be delivered to the Pennsylvania Turnpike Commission's Contracts Administration Department, Attention: **Wanda Metzger**, on or before the date and time provided in Section 1.12 Procurement Schedule of Events, Table 1-1 Key Procurement Dates.

Overnight Delivery Address:
Contracts Administration Department
Attn: Wanda Metzger
PA Turnpike Commission
700 South Eisenhower Blvd.
Middletown, PA 17057
Phone: (717) 831-7429

US Mail Delivery Address:
Contracts Administration Department
Attn: Wanda Metzger
PA Turnpike Commission
P.O. Box 67676
Harrisburg, PA 17106

Please note that use of U.S. Mail, FedEx, UPS, or other delivery method, does not guarantee delivery to the Contracts Administration Department by the above listed time for submission. Proposers mailing Proposals should allow sufficient delivery time to ensure timely receipt of their Proposals. If the Commission office location to which Proposals are to be delivered is closed on the Proposal response date, due to inclement weather, natural disaster, or any other cause, the deadline for submission shall be automatically extended until the next Commission Business Day on which the office is open. Unless the Proposers are otherwise notified by the Commission, the time for submission of Proposals shall remain the same.

1.17 Proposals.

To be considered, Proposers shall submit a complete response to this RFP, using the format provided in PART 2 and following the instructions in PART 2. The Proposer shall submit copies of its Proposal to the Commission Contract Administration person identified in Section 1.16 Response on or before the due date and time for Proposals set forth in Section 1.12 Procurement Schedule of Events, Table 1-1 Key Procurement dates and in the quantities specified in PART 2.

The Proposer shall present the Proposal to the Contracts Administration Department only. No other distribution of Proposals shall be made by the Proposer. An official authorized to bind the Proposer to its provisions must sign the Proposal. If the official signs the Proposal Cover Sheet (provided herein as **Exhibit F-1 Forms**) and the Proposal Cover Sheet is attached to the Proposal, this requirement will be met. For this RFP, the Proposal must remain valid for at least 180 days. Moreover, the contents of the Proposal of the selected Proposer will become contractual obligations if a Contract is entered into, subject to the order of precedence identified in **Exhibit G Draft Contract**.

Each and every Proposer submitting a Proposal specifically waives any right to withdraw or modify it, except as hereinafter provided. Proposals may be withdrawn by written or fax notice (fax number (717) 986-8714) received at the Commission's address for Proposal delivery provided in Section 1.16 Response, prior to the exact hour and date specified for Proposal delivery.

However, if the Proposer chooses to attempt to provide such written notice by fax transmission, the Commission shall not be held responsible or liable for errors in fax transmission. A Proposal may also be withdrawn in person by a Proposer or its authorized representative, provided his/her identity is made known and he/she signs a receipt for the Proposal, but only if the withdrawal is made prior to the exact hour and date set for proposal delivery. A Proposal may only be modified by the submission of a new sealed Proposal or submission of a sealed modification, which complies with the requirements of this solicitation.

1.18 Written Clarification, Oral Presentations and Site Visits.

Proposers who submit Proposals may be required to make written clarification and/or oral clarification and presentation of their Proposals to the Issuing Office through the Contract Administration Department to ensure thorough mutual understanding and Proposer responsiveness to the solicitation requirements. The Issuing Office, through the Contract Administration Department, will initiate requests for clarification and Oral presentations. Oral presentations, if they are used, are currently scheduled to be conducted within the timeframe provided in Section 1.12 Procurement Schedule of Events, Table1-1 Key Procurement dates, should such oral presentations be required.

The PTC may conduct site visits of Proposers' toll facilities provided as reference projects. The Issuing Office will limit any visits to one or more responsible Proposers whose Proposals the Issuing Office has determined to be reasonably susceptible of being selected for award. If site visits are conducted they will take place in a timeframe to be determined by the PTC with reasonable notice provided to the Proposer.

1.19 Best and Final Offers.

The Issuing Office reserves the right to conduct discussions with Proposers for the purpose of obtaining "best and final offers" (BAFO). To obtain best and final offers from Proposers, the Issuing Office may do one or more of the following: a) enter into pre-selection negotiations; b) schedule oral presentations; and/or c) request revised Proposals. The Issuing Office will limit any discussions to one or more responsible Proposers whose Proposals the Issuing Office has determined to be reasonably susceptible of being selected for award.

1.20 Prime Proposer Responsibilities.

The selected Proposer will be required to assume responsibility for all Services offered in the Proposal and resulting Contract whether or not it produces them. Further, the Commission will consider the selected Proposer to be the sole point of contact with regard to contractual matters.

1.21 Proposal Contents.

Proposals will be held in confidence and will not be revealed or discussed with competitors, unless disclosure is required to be made (i) under the provisions of any Commonwealth or United States statute or regulation; or (ii) by rule or order of any court of competent jurisdiction. All material submitted with the Proposal becomes the property of the Pennsylvania Turnpike Commission and may be returned only at the Commission's option. Proposals submitted to the Commission may be reviewed and evaluated by any person other than competing Proposers at the discretion of the Commission. The Commission has the right to use any or all ideas presented in any Proposal. Selection or rejection of the Proposal does not affect this right.

In accordance with the Pennsylvania Right-to-Know Law (RTKL), 65 P.S. § 67.707 (Production of Certain Records), Proposers shall identify any and all portions of their Proposal that contains confidential proprietary information or is protected by a trade secret. Proposals shall include a written statement signed by a representative of the company/firm identifying the specific portion(s) of the Proposal that contains the trade secret or confidential proprietary information.

Proposers should note that "trade secrets" and "confidential proprietary information" are exempt from access under Section 708(b) (11) of the RTKL. Section 102 defines both "trade secrets" and "confidential proprietary information" as follows:

Confidential proprietary information: Commercial or financial information received by an agency: (1) which is privileged or confidential; **and** (2) the disclosure of which would cause substantial harm to the competitive position of the person that submitted the information.

Trade secret: Information, including a formula, drawing, pattern, compilation, including a customer list, program, device, method, technique or process that: (1) derives independent economic value, actual or potential, from not being generally known to and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use; **and** (2) is the subject of efforts

that are reasonable under the circumstances to maintain its secrecy. The term includes data processing software by an agency under a licensing agreement prohibiting disclosure.

65 P.S. §67.102 (emphasis added).

The Office of Open Records has determined that a third party must establish a trade secret based upon factors established by the appellate courts, which include the following:

- the extent to which the information is known outside of his business;
- the extent to which the information is known by employees and others in the business;
- the extent of measures taken to guard the secrecy of the information;
- the value of the information to his business and to competitors;
- the amount of effort or money expended in developing the information, and
- the ease of difficulty with which the information could be properly acquired or duplicated by others.

See Crum v. Bridgestone/Firestone North Amer. Tire., 907 A.2d 578, 585 (Pa. Super. 2006).

The Office of Open Records also notes that with regard to "confidential proprietary information the standard is equally high and may only be established when the party asserting protection shows that the information at issue is either 'commercial' or 'financial' and is privileged or confidential, and the disclosure ***would*** cause substantial competitive harm." (emphasis in original).

For more information regarding the RTKL, visit the Office of Open Records' website at www.openrecords.state.pa.us.

1.22 Debriefing Conferences.

Proposers whose Proposals are not selected will be notified of the name of the selected Proposer and given the opportunity to be debriefed, at the Proposer's request. The Issuing Office will schedule the time and location of the debriefing. The Proposer will not be compared with other Proposers.

1.23 News Releases.

News releases pertaining to this Project will not be made without prior Commission approval, and then only in coordination with the Issuing Office.

1.24 Commission Participation.

Unless specifically noted in this section, Proposers must provide all Services to complete the identified Work. Please refer to **Exhibit A Scope of Work** and attachments for additional details on the Work.

1.25 Price Proposal.

The Price Proposal shall be placed in a separately sealed envelope within the sealed Proposal and kept separate from the Technical Proposal as further instructed in PART 2: Information Required From Proposers.

1.26 Term of Contract.

The term of the Contract will commence on the Effective Date with a base term of ten (10) years, followed by two (2) five-year optional Maintenance Phase extensions, including the following Phases:

- Implementation Phase – The Implementation Phase shall begin on the Effective Date and shall continue until System Acceptance for Southern Beltway/Findlay Connector and all future facilities.
- Maintenance Phase – The Maintenance Phase shall begin upon Acceptance of the Implementation Phase for Southern Beltway/Findlay Connector and all future facilities and shall continue through the end of the base Contract term of ten (10) years.
- Options to Extend – The Optional Extension Phase includes two (2) optional, five-year Maintenance extensions with each to be executed at the sole discretion of the Commission, and with the first extension commencing upon the end of the base Contract term.

Any additional facilities or roadways considered as additions to this Scope of Work will not change the overall duration of the base term and options to extend, as described above.

The Commission shall fix the Effective Date after the Contract has been fully executed by the Contractor and by the Commission and all approvals required by Commission contracting procedures have been obtained.

1.27 Proposer's Representations and Authorizations.

Each Proposer by submitting its Proposal understands, represents, and acknowledges that:

a) All information provided by, and representations made by, the Proposer in the Proposal are material and important and will be relied upon by the Issuing Office in awarding the contract(s). Any misstatement, omission or misrepresentation shall be treated as fraudulent concealment from the Issuing Office of the true facts relating to the submission of this Proposal. A misrepresentation shall be punishable under 18 Pa. C.S. 4904.

b) The price(s) and amount of this Proposal have been arrived at independently and without consultation, communication or agreement with any other Proposer or potential Proposer.

c) Neither the price(s) nor the amount of the Proposal, and neither the approximate price(s) nor the approximate amount of this Proposal, have been disclosed to any other firm or person who is a Proposer or potential Proposer, and they will not be disclosed on or before the Proposal submission deadline specified in the response section of this RFP.

d) No attempt has been made or will be made to induce any firm or person to refrain from submitting a Proposal on this contract, or to submit a Proposal higher in cost than this Proposal, or to submit any intentionally high or noncompetitive Proposal or other form of complementary Proposal.

e) The Proposal is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive Proposal.

f) To the best knowledge of the person signing the Proposal for the Proposer, the Proposer, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last four (4) years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as disclosed by the Proposer in its Proposal.

g) To the best of the knowledge of the person signing the Proposal for the Proposer and except as otherwise disclosed by the Proposer in its Proposal, the Proposer has no outstanding, delinquent obligations to the Commonwealth including, but not limited to, any state tax liability not being contested on appeal or other obligation of the Proposer that is owed to the Commonwealth.

h) The Proposer is not currently under suspension or debarment by the Commonwealth, or any other state, or the federal government, and if the Proposer cannot certify, then it shall submit along with the Proposal a written explanation of why such certification cannot be made.

i) The Proposer has not, under separate contract with the Issuing Office, made any recommendations to the Issuing Office concerning the need for the Services described in the Proposal or the specifications for the Services described in the Proposal.

j) Each Proposer, by submitting its Proposal, authorizes all Commonwealth agencies to release to the Commission information related to liabilities to the Commonwealth including, but not limited to, taxes, unemployment compensation, and workers' compensation liabilities.

1.28 Prevailing Wage Rates.

The Provisions of the Pennsylvania Prevailing Wage Act of August 15, 1961, P.L. 987 as amended, together with the rates and regulations promulgated by the Secretary of Labor and Industry, will apply to this Project. Reference **Exhibit J Prevailing Wage Rate Requirements** for detailed information. For the purpose of pricing the base Work on the Southern Beltway/Findlay Connector, the Proposer should consider the prevailing wages in in both Washington (2 locations) and Allegheny Counties (1 location), since Work will be performed in both jurisdictions. For the purposes of pricing Optional Future Facilities Costs, since no location is specified, Proposer should assume rates for Alleghany County will apply.

1.29 Performance/Payment Bond.

When awarded the Contract, the Proposer shall furnish one (1) signed original of the Performance Bond and Payment Bond, each in the amount of 100 percent of the total Implementation Phase costs, as identified on **Sheet 1 Project Summary, Line 6** of the Contractor's Price Proposal.

The Proposer shall furnish in its Price Proposal Envelope marked "Original" one (1) signed original of a Performance and Payment Bond Commitment Letter. The Performance and Payment Bond Commitment Letter shall be in a form acceptable to the Commission with sufficient surety or sureties, in an amount equal to 100% of the total amount of the price of the Implementation Phase as identified on **Sheet 1 Project Summary, Line 6** of the Proposer's Price Proposal.

The commitment letter shall be signed by an authorized representative of a corporate surety, legally authorized to transact business in the Commonwealth, on the U.S. Treasury Department List of Approved Sureties and otherwise meets the requirements set forth in the Section 24 Surety Bonds, Exhibit G, Draft Contract.

1.30 Indemnification.

The Proposer shall be responsible for, and shall indemnify, defend, and hold harmless the Commission and its Commissioners, officers, employees, and agents from any claim, liability, damages, losses, causes of action, and expenses, including reasonable attorneys' fees, arising from damage to life or bodily injury or real or tangible personal property caused by the negligence or other tortious acts, errors, and omissions of Proposer, its employees, or its subcontractors while engaged in performing the Work of the Agreement or while present on the Commission's premises, and for breach of the Agreement regarding the use or nondisclosure of proprietary and confidential information where it is determined that Proposer is responsible for any use of such information not permitted by the Agreement. The indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or its subcontractors under Workmen's Compensation Acts, Disability Benefits Acts, or other Employee Benefit Act.

1.31 Insurance.

Proposer will comply with the Insurance requirements as described in **Exhibit H Insurance Requirements**.

PART 2 INFORMATION REQUIRED FROM PROPOSERS

2.1 General.

Proposals must be submitted in the format, including sections and heading descriptions, as outlined below. To be considered, the Proposal must respond as instructed to all requirements in this part of the RFP. All cost data relating to this Proposal and all Diverse Business cost data should be kept separate from and not included in the Technical Submittal. Each Proposal shall consist of three (3) separately sealed submittals. The submittals are as follows: (i) Technical Proposal, in response to and in accordance with Sections 2.2. Content of Technical Proposal and 2.3 Submission of Technical Proposal; (ii) Price Proposal, in accordance with and in response to Section 2.4 Submission of Price Proposal, and (iii) DB Requirements Documentation, in response to Section 2.5 Submission of DB Documentation. The cover sheet for the completed Proposal **Exhibit F-1 Forms** shall be included within the Technical Proposal package submitted to the Commission.

The Commission reserves the right to request additional information which, in the Commission's opinion, is necessary to assure that the Proposer's competence; technical solution; number of qualified employees; business organization; financial resources, and other Proposal elements are adequate to perform according to the RFP.

The Commission may make such investigations as deemed necessary to determine the ability of the Proposer to perform the Work, and the Proposer shall furnish to the Issuing Office all such information and data for this purpose as requested by the Commission. The Commission reserves the right to reject any Proposal if the evidence submitted by, or investigation of, such Proposer fails to satisfy the Commission that such Proposer is properly qualified to carry out the obligations of the Contract and to complete the Work specified in **Exhibit A Scope of Work**.

2.2 Content of Technical Proposal.

2.2.1 Economy of Preparation and Page Limitations.

Proposals shall be prepared simply and economically, providing a straightforward, concise description of the Proposer's ability to meet the requirements of the RFP. To that end, Technical Proposal Sections 1-5 shall be limited to a combined total of 100 pages. Portions of the Proposal that are excluded from these page limitations are shown below in Table 2-1 Proposal Page Limitations.

Table 2-1 Proposal Page Limitations

Proposal Sections to be Completed by a Proposer	Page Count Limitations
Proposal Cover Sheet	• No limitations
Proposal Executive Summary	• 2 to 5 pages
Proposal Section 1: Firm Qualifications	Limited to a combined total of 100 pages
Proposal Section 2: Key Team Qualifications	
Proposal Section 3: Approach to Scope of Work and Technical Requirements	
Proposal Section 4: Approach to Project Plan and Implementation	
Proposal Section 5: Approach to Maintenance	
Proposal Section 6: Adherence to the Scope of Work and Requirements Conformance Matrix	• No limitations
Proposal Section 7: Other Required Materials	• No limitations
Price Proposal	• No limitations
Proposal Appendix 1: Product Cut Sheets	• No limitations
Proposal Appendix 2:Preliminary Bill of Materials and Sample Reports	• No limitations
Proposal Appendix 3: Audited Financial Statements	• No limitations
Proposal Appendix 4: Civil Infrastructure Package	• No limitations

2.2.2 Technical Proposal Format and Contents.

The Technical Proposal shall be submitted in the format shown below. Each bulleted item designates a specific and separate section to be included in the Proposal:

- **Proposal Cover Sheet** – Provide the completed signed cover sheet provided as **Exhibit F-1 Forms.** Show the name of your firm; Federal I.D. number; address; name of contact person; contact person's email and telephone number; and the subject: Cashless Tolling System

Implementation and Maintenance**, RFP16-10495-7252.** In addition, it is required that all information requested in **Exhibit F-1 Forms** be provided including information pertaining to location of office performing the Work; contact information; listing of all Pennsylvania offices and total number of Pennsylvania employees, and location of company headquarters

- **Executive Summary** - Provide a two (2) to five (5) page overview of the entire Proposal, describing the most important elements of the Proposal. Identify any Subcontractors and discuss their proposed roles on the Project. Include in this section or in a transmittal letter/cover page a statement regarding full disclosure of any potential conflict with the State Adverse Interest of State Advisor or Consultant Statute as instructed in Proposal Section 1.6 Contractor Integrity Provisions.

- **Proposal Section 1: Firm Qualifications** – Provide the following information regarding the Proposer's qualifications, including Subcontractors. Number and provide the information in the specific format provided below:

    1) Provide a brief history and description of the Proposer's organizational structure, including size, number of employees, capability and area(s) of specialization.
    2) Provide a detailed discussion of the Proposer's qualifications and experience related to the Scope of Work required by this RFP, including Subcontractor firms' relevant experience.
    3) Provide years of experience the firm has in open road tolling (ORT), cashless tolling and video-based tolling, including E-ZPass Group experience relevant to this Project.
    4) Provide years of experience with any non-E-ZPass Group interoperable agencies and/or any multi-protocol experience.
    5) Provide firm's experience in toll system maintenance, including ORT and cashless tolling, and identify where this maintenance work has been previously performed.
    6) Provide annual revenues for the firm and for the subsidiary, division or group responsible for this Project.
    7) State the location of the office(s) from which the Work on this engagement is to be performed for both the Implementation and Maintenance Phases.
    8) Provide a Recent Client List using **Exhibit F-3 Forms**, including a detailed description of the size, total dollar value and specific services provided for each client to which the Proposer provided similar services within the past five (5) years. Specify the name, address and telephone number of the individual responsible at the client organization for the supervision of such services. Include in Proposal Section 7 and note in your response to this item that it has been provided in Proposal Section 7.
    9) Complete the Proposer Company Reference Forms Part 1 using **Exhibit F-4 Forms**. Include in Proposal Section 7 and note in your response to this item that it is provided in

Proposal Section 7. The completed forms must include at least two (2) references to demonstrate that the Proposer meets the minimum requirements for each of the Implementation and Maintenance Phases identified in Section 1.10.

10) Include a copy of the Proposer's audited financial statements for the past two years as Appendix 3 to the Proposal and note in your response to this item that it is provided in Appendix 3. If a Proposer does not produce audited financial statements, the Proposer shall submit any financial statements that it does have (e.g. lines of credit, statements compiled by an outside accounting firm, etc.) and any other information Proposer feels is pertinent in establishing the financial stability of its business/organization. The PTC reserves the right to review other publicly available information with regard to the Proposer's financial stability, as part of the evaluation. If a Proposer has questions about what evidence of the Proposer's financial stability will be acceptable to the Commission, the Proposer should communicate with Commission as set forth in Section 1.14 Questions and Answers.

- **Proposal Section 2: Key Team Qualifications –** Provide responses to the questions below regarding the Proposer's Key Team qualifications, including Subcontractors as applicable. Please number and provide the information in the specific format provided below.

1) Identify Key Team Members on this Project. PTC has indicated the desired level of experience for each Key Team Member below, following the Key Team position name. Key Team Members who must be identified in the Proposal are as follows:

   a) Project Principal: A full-time employee of the Proposer or its parent company for at least one (1) year at the time of Proposal submission with a minimum of ten (10) years of experience in the toll industry, with five (5) years of senior management responsibility for toll projects. Senior management responsibility for at least one (1) toll project of twenty million dollars ($20,000,000) or more in value.

   b) Project Manager: At least five (5) years of experience in the toll industry, with three (3) years as project manager of a roadway tolling project(s) similar to the Work in this Project. Project manager for at least one (1) project of ten million dollars ($10,000,000) or more in value.

   c) Deputy Project Manager: At least three (3) years of experience in the toll industry, with one (1) year as a deputy/project manager of a roadway tolling project(s) similar to the Work in this Project.

   d) Technical/Software Development Manager: At least five (5) years of software development management experience, including at least three (3) years of experience in software development management of roadway projects similar to the Work on this Project.

e) Lane Technical Lead: At least five (5) years of software development experience, including at least three (3) years of experience in software development of lane functionality for roadway projects similar to the Work on this Project.

f) Host Technical Lead: At least five (5) years of software development experience, including at least three (3) years of experience in software development of host functionality for roadway projects similar to the Work on this Project.

g) Installation Manager: At least five (5) years of experience in the installation of toll systems, with at least two (2) years of experience in a responsible installation management role on projects similar to the Work on this Project.

h) Maintenance Manager: At least five (5) years of experience in maintaining toll systems with at least two (2) years of experience in the management of maintenance of systems similar to the Work on this Project. The Maintenance Manager and the Installation Manager responsibilities may be covered by the same person.

i) Quality Assurance/Test Manager: At least five (5) years of experience in quality assurance and testing on similar projects in the toll collection industry or related industry with at least two (2) years' experience as quality manager on a roadway tolling project.

2) Describe the experience of each Key Team Member and how it relates specifically to this Project.

3) Provide resumes (not to exceed two (2) pages per team member), for each of the Key Project Team Members. (Include in Proposal Section 7 and note in your response to this item that it has been provided in Proposal Section 7.)

4) Proposers must complete at least one (1) Key Team References form (Reference Form Part 2) provided in **Exhibit F-5 Forms** for each Key Team member. (Include in Proposal Section 7 and note in your response to this item that it has been provided in Proposal Section 7.)

5) Complete the List of Subcontractors Form from **Exhibit F-2 List of Subcontractors** which includes Subcontractor name; address; work to be performed, and estimated percentage of total Work value to be performed. (Include in Proposal Section 7 and note in your response to this item that it has been provided in Proposal Section 7.)

- **Proposal Section 3: Approach to Scope of Work and Technical Requirements –** Provide responses to the questions below regarding the Proposer's approach to the Scope of Work and requirements. Please number and provide the information in the specific format provided below.

1) Discuss Proposer's technical approach to satisfying all of the functional requirements for the Cashless Tolling System architecture with focus on redundancy and reliability. With

the aid of drawings, describe how the Proposer's solution and choice of Equipment meet the availability requirements.

2) Specifically address how the Proposer's solution and approach will accommodate changes in technology given the potential extended duration of the Implementation Phase, considering the optional facilities.

3) Identify all Software and vendor with version number including operating system; database; security software; monitoring tools and software and freeware for the In-lane Systems and Cashless Toll Host Systems and include product cut sheets in Proposal Appendix 1. Also identify other Proposer projects where such Software is deployed.

4) Describe the Contractor's System security Design that prevents virus attacks and unauthorized access and identify detection and alerting mechanisms in place in the event of attempted or successful intrusions.

5) Identify all In-lane System Equipment and servers and their connectivity with the aid of diagrams. Include details of each of the subsystems and include product cut sheets in Proposal Appendix 1.

6) Provide the Equipment layouts and the sensor placements for the Cashless Tolling System lanes, including travel lanes, shoulders lanes that are eight (8) feet or greater and shoulder lanes that are less than eight (8) feet, in accordance with **Exhibit A Scope of Work**. Wherever possible provide supporting drawings to explain the equipment layouts and sensor spacing using the concepts provided in Scope of Work Attachment 5 Concept Plans for Overhead Structures/Toll gantries.

7) Proposer shall provide the following information in Appendix 4: Civil Infrastructure Package as part of its Proposal in support of the design of the Cashless Tolling System civil infrastructure. (Please refer to Scope of Work Attachment 5: Concept Plan for Overhead Structures and Toll Gantries)

    a) In support of each of the proposed overhead structure designs:

        i. Provide physical location requirements (transversely, longitudinally and vertically) for all Cashless Tolling System components to be located on the overhead structure. Spatial location requirements for each component shall be provided relative to the whole of the proposed Cashless Tolling System and at least one element of the physical roadway for transverse and vertical dimensions (such as edge of shoulder, edge of travelway, pavement surface). Longitudinal dimensions shall reference the first element of the Cashless Tolling System in the direction of travel or some other similar, readily referenced feature of the proposed Cashless Tolling System.

        ii. Provide the range and typical physical mounting requirements for all Cashless Tolling System components required as part of the proposed solution to be mounted on the overhead structure. Physical mounting

requirements shall include the type, size and configuration of hard mounting points on the mounting arms/overhead structure to which the proposed toll system component would typically mount either directly or via a typical mounting bracket. An example of a typical hard mounting point would be a metal pipe of a specified diameter. In association with the mounting requirements, provide details on how the Equipment will satisfy the Commission's tethering requirements by providing details of the tether attachments on proposed Equipment and the requirements for the anchoring ends such that these can be coordinated with the overhead structure design along with the Equipment mounting requirement.

b) In support of roadway design: provide requirements for in-pavement sensors and any other subsurface requirements, including requirements for pavement materials, extents, or similar. Examples of other subsurface requirements may include but are not limited to, restrictions on metallic features within proximity of pavement sensors.

c) In support of the toll equipment building civil design: Provide direction to civil designer for space requirements for Equipment racks and cabinets mounted within the toll equipment building in accordance with the mounting requirements set forth in **Exhibit A Scope of Work**. Include drawings of all Equipment and servers that will be installed within the equipment racks/toll equipment building.

d) In general support for civil design:

   i. Provide physical environmental requirements for all Cashless Tolling System components in accordance with the environmental requirements set forth in **Exhibit A Scope of Work**. Physical requirements shall include, but are not limited to, temperature; humidity; vibration frequencies; deflection limitations, and any other constraints of the proposed Cashless Tolling System that will need to be considered more specifically as part of the design of the overhead structure and toll equipment building.

   ii. Provide general requirements for cabling and conduits (or similar conveyance) for power and data from the toll equipment building to the gantry for the purposes of confirming the type, size and number of conduits required. Provide any limitations on the maximum length of cabling between components that may dictate the location of Equipment relative to each other. Address any issues with constraints on location of the AVI readers in the toll equipment building.

   iii. Provide general power and data requirements to the toll equipment building that will support the Cashless Tolling System.

iv. Provide any specific mounting requirements and restrictions for affixing all overhead components to the overhead structure.

8) Provide a preliminary bill of materials (BOM) in Proposal Appendix 2A that meets the requirements set forth and described in **Exhibit A Scope of Work**. (Note in your response to this item that it has been provided in Proposal Appendix 2A). The BOM shall fully match the Equipment and third party products in the Price Proposal. (Do not include any pricing in this version of the BOM). Identify a second source for each type of equipment where possible.

9) Provide a description of the proposed System bandwidth requirements with back-up details and a diagram of the proposed System network architecture that presents all of the Cashless Tolling In-lane and Cashless Toll Host Systems Local Area Network (LAN), including Proposer's Design for redundancy to meet the network requirements in accordance with **Exhibit A Scope of Work**.

10) Discuss the Proposer's detailed approach for implementing a cloud solution for the Cashless Toll Host System installation as opposed to a physical location, as described in **Exhibit A Scope of Work**. The description should include details of how the solution would meet appropriate architecture and security measures. Maintenance and Software Support Service details for all elements of the Cashless Toll Host System in a cloud solution environment shall also be described.

11) Describe clearly and with the aid of diagrams and flow charts the proposed System transaction processing logic. Explain how the Proposer's System processes and frames vehicle transactions. Provide a diagram that identifies framing logic, timing and event processing with specific emphasis on vehicle spacing and the associated performance requirements of **Exhibit A Scope of Work**. Details of the System's ability to handle single point of failures within each subsystem and handling of degraded mode operations and their impact on transaction processing and toll revenue shall be explained.

12) Discuss the Proposer's Design approach and reporting to ensuring and confirming: a) that there are no missing transactions and all vehicles are accurately captured and reported; b) receipt of all transactions at the Cashless Toll Host Systems; c) subsequent transmission of all transactions to the PTC host system; d) subsequent guaranteed transmission of all AVI transactions to the existing CSC/VPC systems; e) successful transmission of all video transactions and images to the existing CSC/VPC systems; and f) that all errors, exceptions, missing and failed transactions are identified and reported as further set forth in **Exhibit A Scope of Work**. Provide details of the Proposer's solution to the transaction reconciliation and audit process described in **Exhibit A Scope of Work**.

13) Discuss the Proposer's approach to designing and integrating the Automatic Vehicle Identification (AVI) system in order to meet performance requirements as further set forth in **Exhibit A Scope of Work**. Describe any logic incorporated into the AVI system

to prevent cross lane reads and false reads and to account for multiple transponders in vehicles.

14) Explain the Proposer's solution and the flexibility in the Design to address national Interoperability requirements relating to inclusion of multiprotocol readers and/or the inclusion of multiprotocol transponders; modifying and adapting the Design to incorporate new readers, antennas types and locations, and supporting the transition to the new interoperable solution with limited interruptions to the revenue collection.

15) Discuss the Proposer's Automatic Vehicle Classification (AVC) system solution that meets the requirements of **Exhibit A Scope of Work**. Address the AVC solution and Proposer's Design for the following:

    a) Handling of stop and go and bumper-to-bumper traffic with vehicles that are spaced as closely as three (3) feet apart.

    b) Handling of lane straddling and lane changing.

    c) Providing redundancy in vehicle classification, vehicle framing, and camera triggers.

    d) Vehicle classification during degraded mode operations.

    e) Handling the environmental conditions in Pennsylvania, specifically heavy rain, fog and snow, and their impacts on vehicle detection, framing, and camera trigger. Explain how the Proposer's Equipment selection and logic will prevent false detection and triggers in the extreme weather conditions that are common to the area.

    f) Describe how processing rules will be implemented to provide vehicle classification that meets the PTC Class structure for axle/profile based classification as described in Scope of Work Attachment 4A PTC Proposed AVC Class Structure and Silhouette and 4B E-ZPass Group Matched Classes.

16) Discuss Proposer's solution for a license plate image capture and processing system (LPICPS) from the point of identification of a video transaction at the lane-level to the automatic extraction of the license plate data, if provided. Proposer should also specifically address:

    a) How the Proposer's solution and placement of camera provide the redundancy and meets the image processing requirements of **Exhibit A Scope of Work**.

    b) The LPICPS camera and server architecture redundancy and reliability; specifically, how the solution ensures images are never lost when there are single points of failure, and how images are successfully saved, correlated to the video transaction and subsequently transmitted to the existing CSC/VPC system along with the video transaction in accordance with the interface control document in

Attachment 13 Cashless Toll Zone to TransCore CSC/VPC System Interface Control Document (ICD) - Images/Data.

c) Reconciliation and audit of images related to successful capture of images for all video transactions; statusing of the successful transmission of the video transactions and images to the existing CSC/VPC system to the Cashless Toll Host, and validation of the reconciliation process with the support of reports to meet the requirements of the Scope of Work.

d) Address your technical approach to performing automatic extraction of vehicle license plate number, jurisdictions and plate type, as required in **Exhibit A Scope of Work** to meet the accuracy required in **Exhibit A Scope of Work**. Specifically discuss:

   i. Provision of an image review screen for auditing and validating the OCR/ALPR performance requirements and image quality, if provided.

   ii. The technical approach to providing notification to enforcement personnel, as described in **Exhibit A Scope of Work**, when license plates and transponders on the Violation Enforcement List (VEL) are identified.

e) Provide detailed characteristics pertaining to quality of the image captured by the ALPR camera:

   i. Number of pixels per horizontal and vertical stroke-width of the plate numbers

   ii. Number of pixels per lane image

   iii. Number of pixels per plate width

   iv. Contrast to noise ratio

   v. Size of each image set

   vi. Number of images per camera (image set)

17) Detail the proposed logic for transmission of the Transponder Status List (TSL) from the Cashless Toll Host to each of the zone controllers to meet the requirements described in **Exhibit A Scope of Work**. Explain how the Design will ensure the TSL for all E-ZPass Agencies and Interoperable agencies will be sent to the lanes expeditiously without impacting lane operations and performance. Provide sample reports that support the System's compliance to requirements.

18) Discuss Proposer's provision of a MOMS that supports the Maintenance requirements of **Exhibit A Scope of Work**. Also, describe how Proposer solution will support the different levels of Maintenance proposed for the Project, namely PTC technical staff performing Maintenance services on the Cashless Toll Host System. Identify all third-party monitoring software and tools used and their integration into the MOMS. Provide

sample reports that are used to validate maintenance performance requirements specified in Scope of Work Section 7. Describe the asset management functions of the MOMS and interfaces with the PTC SAP to exchange work order creation and disposition data and Equipment inventory data.

19) Discuss Proposer's provision of a Dashboard for real-time monitoring of the Cashless Tolling System locations and specifically how this Dashboard will help the Commission's Network Control staff to identify and monitor Equipment problems and System issues. Provide samples, if available, of the Dashboard screen shots that demonstrate pictorial aspects and ease of access to DVAS, images and detailed event data as examples, if available, and to support your statements.

20) Discuss with the aid of diagrams the Proposer's DVAS solution and the Design approach to meeting the requirements of **Exhibit A Scope of Work**. Describe the user selection criteria for review of playback video and lane event data. Provide actual images and screen shots, if available, to support your statements.

21) Discuss Proposer's adherence to the performance requirements and explain how Proposer will meet or exceed key specific performance requirements set forth in **Exhibit A Scope of Work**. Provide actual examples, if available, of how each of the performance requirements was met or exceeded on other similar projects and how the performance was measured.

22) Discuss Proposer's approach to designing an interface to various Commission systems; provide specifics on approach to the interface to each of the systems identified in Attachment 10 Cashless Tolling Concept Plan, addressing each of the interface items identified in the flow. Describe the processes in place to detect and interface issues.

23) Discuss Proposer's approach to satisfying the specific reporting requirements of the Project, highlighting any unique features of Proposer's reporting system relating to performance reporting and other types of reports. Also, specifically address limiting parameters to lane numbering and Plaza reporting structure(s), if any. Provide examples of the Proposer's flexibility in mapping toll zones by District, Highway, tolling point and milepost. Provide examples of key reports and graphs to support your statements in Proposal Appendix 2B.

24) Detail the Proposer's Cashless Toll Host System solution at the primary and secondary facilities focusing on redundancy, data resiliency and high availability. Address Contractor's approach to managing toll rates and schedules and fare determination. Provide a description of all transaction validation and pre-processing logic implemented and creation of the scrub list for transmission to the existing CSC/VPC system that ensure customers are not incorrectly billed.

25) Discuss Proposer's approach to testing and System Acceptance, as described in **Exhibit A Scope of Work** to support the Project. Please address:

a) Proposer's overall test plan approach.

b) Phased approach to testing the lane solutions.

c) Plans for factory acceptance test (FAT) and location of the test site, including test site configuration.

d) Plans for conduct of the Onsite First Installation Test (OFIT) in live traffic.

e) Approach to Operational/Acceptance Test of the Project and how Proposer plans to conduct the AVI accuracy testing within the constraints of live traffic.

f) Approach to commissioning testing.

- **Proposal Section 4: Approach to Project Plan and Implementation –** Provide responses to the questions below regarding the Proposer's approach to the Project Plan and Implementation. Please number and provide the information in the specific format provided below.

  The Commission has established tentative milestone dates for the Project that are subject to change at the sole determination of the Commission. These milestones are provided in **Exhibit E Project Implementation Schedule**. This list of milestones is not intended to include all Project milestones of the Project, but to present planned major milestones to allow the Proposer sufficient detail to develop a meaningful preliminary Project Schedule as a part of its Proposal. Proposers may identify certain interim milestones on the Project Schedule; however, it is critical that the milestone dates in bold italics are achieved on the dates shown in the schedule. With these points in mind, Proposers shall provide the following information:

  1) Discuss the approach for delivering the Cashless Tolling System in the timeframe specified, highlighting the major challenges and issues to meeting the Project milestones established in **Exhibit E Project Implementation Schedule**. Identify key elements to your approach. Identify and describe any anticipated potential problems or issues associated with the current schedule provided in **Exhibit E Project Implementation Schedule**; the Proposer's approach to resolving these problems and any special assistance that will be requested from the Commission to meet the schedule.

  2) Provide a Preliminary Project Implementation Schedule in MS Project format that meets the schedule guidelines set forth above and is based on the **Exhibit E Project Implementation Schedule**. The schedule shall be resource loaded. Do not include Gantt chart bars in the schedule. All major elements of the Project requirements shall be addressed in the Preliminary Implementation Project Implementation Schedule, including draft submissions, review cycles and final Approvals.

  3) Discuss the Proposer's approach to project management, addressing the Project Management Plan requirements of **Exhibit A Scope of Work**. Please specifically discuss your approach to the following project management elements:

     a) Proposed management of the Project schedule.

b) Project communications plan.
c) Planned formal meetings schedule.
d) Project issues identification and escalation processes.
e) Risk management plan.

4) Specifically address Proposer's approach to coordination of the Design with the civil contractor responsible for the provision of the overhead structure, pavement and shelters in accordance with **Exhibit A Scope of Work**, given that the civil design work will be in progress at the time of Contract execution on this Project. Provide examples of similar experience and lessons learned to enhance communication and coordination that will be applied to the benefit of the Commission.

5) Provide an Implementation Phase organization chart that shows planned staffing for all levels of the Project, which is consistent and coordinated with the pricing and staffing provided in the Price Proposal.

6) Discuss how the Implementation Phase will be staffed and the intended level of effort. Include location of staff, headcounts and full time equivalents (FTEs). Provide details on staffing at least one level below the Key Team Members. The information provided must be consistent and coordinated with the pricing and staffing provided in the Price Proposal, as well as with the organizational chart provided in item 5 above.

7) Provide a plan for staffing on the Commission site from installation through Acceptance. The Commission desires a local project office with a dedicated on-site project manager during Implementation Phase. In your plan identify which staff will be on-site in this time period and for what percentage of time.

8) Discuss the installation process and how Proposer intends to meet the installation requirements of **Exhibit A Scope of Work** and meet the schedule requirements. Also, specifically address:

   a) The order that the Cashless Tolling System Equipment items and Software are to be installed and the estimated phases and duration of installation.

   b) Required floor space and power for all systems that will be installed at the Commission facilities.

9) Specifically address what elements will be in place during the installation process to ensure timely communication and resolution of problems with the Commission's civil designer and contractor without the intervention of the Commission.

10) Discuss Proposer's approach to meeting the transition requirements identified in **Exhibit A Scope of Work** and identify what major transition issues are anticipated by Proposer and how these issues shall be addressed. The approach to transition should include discussion of the following:

    a) Transition to cashless tolling with the goal of minimizing operational impacts and cost.

b) Gantry and space frame solutions.

- **Proposal Section 5: Approach to Maintenance –** Provide responses to the questions below regarding the Proposer's approach to Maintenance. Please number and provide the information in the specific format provided below.

1) Discuss the Proposer's approach to Maintenance that will meet or exceed all Maintenance services and warranty requirements as specified in **Exhibit A Scope of Work**.
2) Discuss the Proposer's plan to coordinate the delivery of Maintenance Services with the CSC/VPC provider and operator and other interfacing third parties. Specifically address the applications and tools that facilitate identification of problems with interfacing systems and the ability to communicate effectively with the Commission and third party providers on a long term basis.
3) Discuss the Proposer's plan for coordination of the Commission and Contractor's Maintenance responsibilities.
4) Discuss and illustrate the ability of MOMS to facilitate Maintenance activities and effectively monitor System performance.
5) Discuss and illustrate how Maintenance staffing would be increased in order to address current and potential future implementations, which would occur across a broad geographic region. Please provide specific information including how Maintenance staffing might increase and be impacted by geographic diversity. Identify what the drivers might be for efficiencies in Maintenance costs as the number of facilities increase. Do not include any pricing or cost information in response to this question.
6) Provide an organizational chart that details how all required Maintenance functions will be staffed with intended level of effort (broken down by facility for potential future implementations). The organization chart must be consistent with the pricing and staffing assumed and provided in the Price Proposal.
7) The Commission desires a local Maintenance Office to be in place continuously beginning at the start of the Maintenance Phase. Discuss how this will be addressed in a cost-effective manner.
8) Discuss Proposer's staffing model and how all required Maintenance functions will be staffed with the intended level of effort identified. Include location of staff, headcounts and full time equivalents (FTEs). Provide detail regarding daily work hours and coverage schedules. The information must be consistent with the pricing and staffing provided in the Price Proposal, as well as with the organizational chart provided as a part of Item 2 above.
9) Discuss the Proposer's training approach for the Proposer's Maintenance staff and for Commission staff.

10) Identify specifically what cost items are included in the Maintenance Services and what items would represent additional costs to be charged to the Commission. Do not include any information regarding actual cost or price.

11) Provide Proposer's anticipated schedule for upgrades, patches and updates, upon which pricing is based. Specifically address what Software and application upgrades and updates are included in the Maintenance Services pricing (e.g. operating system and relational data base management systems) and on what frequency. Do not include any information regarding actual cost or price.

- **Proposal Section 6: Adherence to the Scope of Work, Terms and Conditions and Requirements Conformance Matrix**

1) The Proposer must complete and submit the Excel version of the Requirements Conformance Matrix which is provided in PDF form in **Exhibit F-6 Forms**. The matrix covers each of the functional and technical requirements set forth in **Exhibit A Scope of Work**. The Excel version of the Workbook is attached to the posted PDF of the RFP and can be downloaded from the Commission's Website at: www.paturnpike.com/procurement.

2) Proposers are not to alter the technical requirements listed in the Requirements Conformance Matrix in any way and must use the worksheets provided. The Proposer shall submit a PDF version of the completed matrix in this Proposal Section 6, in addition to submitting the Excel version of the matrix on CD/DVD, as directed in Section 2.3 Submission of Technical Proposal.

3) If a Proposer indicates in the Requirements Conformance Matrix that a Technical Requirement is not provided ("N"), the specific requirement(s) to which exception is taken must also be separately identified and explained in this Proposal Section 6. In these cases, please indicate a description of the exception taken in the comments column of the Requirements Conformance Matrix and provide a more detailed explanation in this Proposal Section 6 for each of the "N" items.

4) The Proposer must submit its Proposal, including the Price Proposal, on the basis of the terms and conditions set out in **Exhibit G Draft Contract**. The Issuing Office may reject any Proposal that is conditioned on the negotiation of terms and conditions set out in **Exhibit G Draft Contract** or to other provisions of the RFP as specifically identified above.

5) In Proposal Section 6, Proposers may identify and describe any key assumptions made related only to **Exhibit A Scope of Work**. No assumptions regarding the terms and conditions of the Contract shall be included in the Proposal. Scope of Work assumptions may be considered during the Proposal evaluation process at the sole discretion of the Commission.

- **Proposal Section 7: Forms and Submittals** – Proposers shall provide all Proposal forms required to be submitted as part of the RFP in Section 7 of the Proposal, unless otherwise specifically directed. Proposers shall submit properly completed forms that have been provided in **Exhibit F Forms**. Please refer to Table 2-2 below for a Forms and Submittals Checklist. The checklist identifies the location of the form or the submittal requirement in the RFP and also where the form or submittal is to be included in the Proposal.

  Proposers shall not modify any of the forms unless specifically instructed by the Commission to do so.

Table 2-2: Forms and Submittal Checklist

Form #	Form/Submittal Name	Location in RFP	Location of Form/Submittal in Proposal
Forms to be Submitted			
F-1	Proposal Cover Sheet	Exhibit F-1	Technical Proposal Envelope with Original Proposal
F-2	List of Subcontractors	Exhibit F- 2	Technical Proposal Section 7
F-3	Recent Client List	Exhibit F-3	Technical Proposal Section 7
F-4	Reference Forms Part 1	Exhibit F-4	Technical Proposal Section 7
F-5	Reference Forms Part 2	Exhibit F-5	Technical Proposal Section 7
F-6	Requirements Conformance Matrix	Exhibit F-6	Technical Proposal Section 6
F-7	Price Proposal	Exhibit F-7	Price Proposal Envelope
F-8	Proposer Questions Forms	See Section 1.14	N/A: To be used for submission of Proposer questions to PTC
Other Proposal Submittals			
N/A	Resumes	See Section 2.2.2	Technical Proposal Section 7
N/A	Preliminary Project Implementation Schedule	See Section 2.2.2	Technical Proposal Section 4
N/A	Implementation Phase Organization Chart	See Section 2.2.2	Technical Proposal Section 4
N/A	Maintenance Phase Organization Chart	See Section 2.2.2	Technical Proposal Section 5
N/A	Payment and Performance Bond Commitment Letter	See Section 1.29	Price Proposal Envelope
N/A	Confidential/Proprietary Materials Statement (if applicable)	See Section 1.21	Technical Proposal Section 7
N/A	DB Documentation	See Section 2.5	DB Documentation Envelope

- **Proposal Appendices** - The Proposer shall submit the following materials in the form of Proposal Appendices:

- Proposal Appendix 1: Product Cut Sheets for key System components based on the System described in Proposal Section 3: Project Approach to Technical Requirements.
- Proposal Appendix 2:
    - 2A: Preliminary Bill of Materials (BOM) that details all Equipment and third party products provided and will become the basis for the complete, Approved parts list, including spare parts.
    - 2B: Sample Reports (if available)
- Proposal Appendix 3: Audited Financial Statements (Two Years)
- Proposal Appendix 4: Civil Infrastructure Package

2.3 Submission of Technical Proposal.

The following are instructions for submission of the Technical Proposal:

1) The Technical Proposal shall be organized as instructed above in Section 2.2.2 Technical Proposal Format and Contents. Type size shall be no less than 11-point font-type; however charts and tables may be in a font no less than 10 point. Fold-outs up to 11X17 inches for drawings, schedule and organization charts are permitted. Each Proposal page shall be numbered for ease of reference.
2) One (1) original and five (5) copies of the Technical Proposal shall be submitted by the Proposer. In addition to the hard copies of the proposal, two complete and exact copies of the entire proposal (Technical, Cost and DB submittals, along with all requested documents) on CD/DVD or Flash Drive in Microsoft Office or Microsoft Office-compatible format. The electronic copy must be a mirror image of the hard copy. Proposer should ensure that there is no costing information in the technical submittal. The CD/DVD or Flash drive should clearly identify the Proposer and include the name and version number of the virus scanning software that was used to scan the CD/DVD or Flash drive before it was submitted.
3) All boxes, packages, and envelopes containing Technical Proposals shall be clearly labeled with Proposer's name, "Technical Proposal" and this RFP title and number (Cashless Tolling System Implementation and Maintenance, **RFP16-10495-7252**) along with the package number (e.g., 1 of 5, 2 of 5). The original Technical Proposal shall be marked "Original".
4) Two copies of a CD/DVD or flash drive also shall be provided by the Proposer with the Technical Proposal. The CD/DVD or flash drive shall contain the Technical Proposal in its entirety, including all completed forms and Proposal appendices in PDF or scanned format, ***but excluding the Implementation Payment and Performance Bond commitment letter and the Price Proposal.***

5) The Technical Proposal marked "Original" shall include the original of the signed cover sheet. **(Exhibit F-1 Forms)**

6) Two copies of the Requirements Conformance Matrix shall also be submitted in a separate CD/DVD or flash drive in Microsoft Excel 2010 with the Technical Proposal. Each CD/DVD or flash drive containing the Requirements Conformance Matrix shall be clearly labeled as "Requirements Conformance Matrix". Refer to Section 2.2.2 Technical Proposal Content (Proposal Section 6) and **Exhibit F-6 Forms** for further detail and completion instructions on the Conformance Matrix.

2.4 Submission of Price Proposal.

The following are instructions for submission of the Price Proposal:

1) Price Proposals shall be submitted using the Price Proposal Workbook included as **Exhibit F-7 Forms.**

2) Proposers shall complete the Price Proposal Workbook in accordance with **Exhibit C Price Proposal Instructions**.

3) Price Proposals must be submitted in a separately sealed envelope from the Technical Proposal.

4) One (1) original and five (5) copies of the Price Proposal shall be submitted by the Proposer. In addition to the hard copies of the proposal, two complete and exact copies of the entire proposal (Technical, Cost and DB submittals, along with all requested documents) on CD/DVD or Flash Drive in Microsoft Office or Microsoft Office-compatible format. The electronic copy must be a mirror image of the hard copy. Proposer should ensure that there is no costing information in the technical submittal. The CD/DVD or Flash drive should clearly identify the Proposer and include the name and version number of the virus scanning software that was used to scan the CD/DVD or Flash drive before it was submitted.

5) All boxes, packages, and envelopes containing Price Proposals shall be clearly labeled with Proposer's name, "Price Proposal" and this RFP title and number (Cashless Tolling System Implementation and Maintenance, **RFP16-10495-7252**) along with the package number (e.g., 1 of 5, 2 of 5). The original Price Proposal envelope shall be marked "Original".

6) Two copies of a CD/DVD or flash drive containing the Price Proposal in electronic format shall be provided with the Price Proposal. The file format for the electronic copy of the Price Proposal shall be Microsoft Excel 2010. The CD/DVD or flash drive containing the Price Proposal shall be clearly labeled with the same nomenclature identified for the outside of the sealed Price Proposal package.

7) Proposers shall not include any assumptions in their Price Proposals. If the Proposer includes assumptions in its Price Proposal, the Issuing Office may reject the Proposal. Assumptions should be provided in the manner set forth in Section 2.2.2 Technical Proposal Form and Content (Proposal Section 6).

8) **Any costs for Work that is not provided in the Price Proposal will be assumed as no charge to the Commission.**

9) The Contractor shall only perform Work on the Contract after the Effective Date is affixed and the fully-executed contract sent to the selected Proposer. The Commission shall issue a written Notice to Proceed to the selected Proposer authorizing the Work to begin on a date which is on or after the Effective Date. The Contractor shall not start the performance of any Work prior to the date set forth in the Notice to Proceed and the Commission shall not be liable to pay the Contractor for any Service or Work performed or expenses incurred before the date set forth in the Notice to Proceed. No Commission employee has the authority to verbally direct the commencement of any work under the Contract.

2.5 Submission of Diverse Business (DB) Participation Documentation.

The following are instructions for submission of the DB participation documentation:

1) The Proposer must demonstrate in its DB participation submittal that it meets the Commission's requirements set forth in **Exhibit I Diverse Business (DB) Requirements.** There is a 10% minimum participation level (MPL) for DBs established for within the base Contract and any additional options thereafter. The utilization of DBs is encouraged and will be considered as criteria in the evaluation of proposals and may be considered as a factor in the Commission's selection of a firm for this Contract. In particular, the Proposer shall address the section of the DB Requirements labeled, "Actions Required by Proposer during the procurement/consultant selection phase".

2) The DB participation submittal shall also indicate the amount of DB participation incurred in the Proposal in terms of dollars committed and percentage of total contract amount.

3) The DB documentation must be submitted in a separately sealed envelope from the Technical and Price Proposals as further set forth below.

4) One (1) original and five (5) copies of the DB Documentation shall be submitted by the Proposer.

5) The envelope containing the DB participation documentation shall be clearly labeled with Proposer's name, "DB Documentation" and this RFP title and number (Cashless Tolling System Implementation and Maintenance, **RFP16-10495-7252**).

6) Two copies of a CD/DVD or flash drive containing the DB Documentation in electronic format shall be provided within the DB Documentation envelope. The file format for the electronic copy of the DB Documentation shall be PDF or scanned format. The CD/DVD or flash drive containing the DB Documentation shall be clearly labeled with the same nomenclature identified for the outside of the sealed DB Documentation package.

PART 3 CRITERIA FOR SELECTION

3.1 Mandatory Responsiveness Requirements.

To be eligible for selection, a Proposal shall be (a) timely received from a Proposer at the date and time set forth in Section 1.12 Procurement Schedule of Events, Table 1-1; and (b) properly signed by the Proposer; and c) meet the minimum experience requirements for cashless tolling/ORT Implementation and Maintenance set forth in Section 1.10 Minimum Experience Requirements.

3.2 Technical Nonconforming Proposals.

The three (3) Mandatory Responsiveness Requirements set forth in Section 3.1 above (a), b), and c)) are the only RFP requirements that the Commission will consider to be non-waivable. The Issuing Office reserves the right, in its sole discretion, to (1) waive any other technical or immaterial nonconformities in the Proposal, (2) allow the Proposer to cure the nonconformity, or (3) consider the nonconformity in the evaluation of the Proposal.

3.3 Proposal Evaluation.

Proposals will be reviewed, evaluated, and rated by a Technical Evaluation Team (TET) of qualified personnel based on the evaluation criteria listed below. The TET reserves the right to check the References provided in the Proposal, but the TET is not required to do so. If the Proposer's references are checked or a site visit of a proposer's installation is conducted, this information will be considered as part of the TET's Evaluation. The TET will present the evaluations to the Professional Services Procurement Committee (PSPC). The PSPC will review the TET's evaluation and provide the Commission with the firm(s) determined to be highly recommended for this assignment.

The Commission will select the most highly qualified firm for the assignment or the firm whose Proposal is determined to be most advantageous to the Commission by considering the TET's evaluation and the PSPC's determination as to each firm's rating. In making the PSPC's determination and the Commission's decision, additional selection factors may be considered taking into account the estimated value, scope, complexity and professional nature of the services to be rendered and any other relevant circumstances. Additional selection factors may include, when applicable, the following: geographic location and proximity of the firm, firm's Pennsylvania presence or utilization of Pennsylvania employees for the assignment; equitable distribution of work; diversity inclusion; and any other relevant factors as determined as appropriate by the Commission.

Award will only be made to a Proposer determined to be responsive and responsible in accordance with Commonwealth Management Directive 215.9, Contractor Responsibility Program.

3.4 Evaluation Criteria.

The following criteria will be used, in order of relative importance from the highest to the lowest, in evaluating each Proposal:

1) **Proposal Section 3: Approach to Scope of Work and Technical Requirements, and Proposal Section 6: Adherence to Scope of Work, Terms and Conditions and Requirements Conformance Matrix.**

   a) *Technical Solution*

      i. System Design – Logic, advantages and proven approach.

      ii. System performance and reliability – Documented performance of installed systems on similar projects.

      iii. Evidence of ability to meet and exceed technical requirements based on the Technical Proposal, including Proposal responses to RFP questions.

      iv. Degree to which technical solution addresses Project user needs.

   b) *Completion of the Requirements Conformance Matrix*

      i. Degree of adherence to requirements

      ii. Overall maturity and risk of solution, evidenced by the degree of technical requirements already in place and proven in production.

   c) *Adherence to Proposal Layout, Format and Content Requirements*

2) **Proposal Section 1: Firm Qualifications**

   a) *Corporate Resources and Organization of the Firm* – Evidence of overall corporate resources available to ensure completion of Project.

   b) *Financial Resources* – Financial stability and strength of the firm.

   c) *Project Experience* – Nature, quality, and relevance of ongoing and completed projects.

   d) *Firm Commitments* – Other on-going commitments and priorities that could impact this Project.

   e) *Adherence to Proposal Layout, Format and Content Requirements*

3) **Proposal Section 2: Key Team Qualifications**

   a) *Qualifications and Experience of Key Project Team* – Demonstrated relevant experience of the project manager and other Key Team members.

   b) *Key Personnel Role* – Key Project Team members' experience compared to their role on this Project.

   c) *Subcontractors* – Experience, technical competence and role of Subcontractors.

   d) *Adherence to Proposal Layout, Format and Content Requirements*

4) **Proposal Section 4: Approach to Project Plan and Implementation**

a) *Project Plan*

i. Implementation organization and staffing

ii. Logic, clarity and specificity of Work plan.

iii. Approach to training, including level of training resources offered and the approach to training the Commission resources.

iv. Approach to installation, phasing and transition.

v. Approach to civil construction coordination

b) *Project Schedule* – Completeness and detail in the schedule provided and demonstration of ability to meet or exceed the scheduling requirements of the Project.

c) *Time Commitment* – Time commitment of Key Team members in the Implementation Phase.

d) *Local Presence* – Degree of local presence commitment during the Implementation Phase.

e) *Adherence to Proposal Layout, Format and Content Requirements*

5) **Proposal Section 5: Approach to Maintenance**

a) *Maintenance Requirements* – Evidence of an approach to Maintenance that meets or exceeds all Maintenance services and warranty requirements as specified in **Exhibit A Scope of Work**.

b) *Maintenance Coordination* – Demonstrated ability to coordinate the delivery of Maintenance Services with the CSC/VPC provider and operator and other interfacing third parties. The evaluation will also consider items such as:

i. Provision of applications and tools that facilitate identification of problems with interfacing systems.

ii. Evidence of demonstrated ability to communicate effectively with the customer on a long term basis.

iii. Evidence of a successful plan for coordination of Commission and Contractor Maintenance responsibilities.

c) *Effectiveness of MOMS* – Evidence of ability of MOMS to facilitate Maintenance and efficiently monitor System performance.

d) *Degree of local presence of Contractor during the Maintenance Phase*

e) *Adherence to Proposal Layout, Format and Content Requirements*

6) *Price* – While this area may be weighted heavily, it will not normally be the deciding factor in the selection process. The Commission reserves the right to select a Proposal based upon all the factors listed above, and will not necessarily choose the firm offering the best price. The

Commission will select the firm with the Proposal that best meets its needs, at the sole discretion of the Commission.

7) *Commitment to Diversity and Inclusion* – This refers to the inclusion of DB firms, as described in Section 2.5 and the extent to which they are expected to participate in the Contract.

Exhibit A
Scope of Work

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TABLES AND FIGURES

I. SCOPE OF WORK

1.1 Background

The Pennsylvania Turnpike Commission (PTC) operates and maintains nearly five hundred and fifty (550) miles of turnpike along six (6) highways. These highways include the full length of I-76 (the Mainline) through the Commonwealth, as well as portions of I-476 (the Northeastern Extension), PA 43 (Mon-Fayette Expressway), PA 66 (Amos K. Hutchison Bypass), PA 576 (Findlay Connector), and I-376 (Beaver Valley Expressway). The Turnpike Mainline and Northeastern Extension operate as a ticket system in which toll rates are based primarily on vehicle weight and the distance traveled from their origin to destination. The Western extensions (which include Amos K. Hutchinson Bypass, Beaver Valley Expressway and Mon-Fayette Expressway), one (1) plaza on the Mainline ticket system (Gateway), and two (2) plazas on the Northeastern Extension (Keyser Ave and Clarks Summit) operate on a barrier system, where customers pay tolls based on weight, number of axles or both at each plaza they encounter along their route.

Within the turnpike system, toll points are located in four (4) basic configurations: on the mainline, on trumpet interchanges, on the ramps of diamond interchanges and on slip ramps. Mainline plazas exist between the interchanges, spanning the width of the highway and tolling both directions of travel. Fourteen (14) locations along the various Turnpike highways use this layout. Along the Mainline and Northeastern Extension highways, most other toll points are designed as trumpet interchanges in order to allow the lanes to converge at a single point at the toll plazas. On Pennsylvania's Turnpike, these locations are typically staffed. At four (4) locations along the Mainline and Northeastern Extension, un-staffed toll points are located on slip ramps which accommodate E-ZPass customers only. The remaining toll points along the Turnpike Western extensions are designed as diamond interchanges, with un-staffed toll booths along the interchange ramps (two per toll location). Table I-1 details the number and type of toll points by highway.

Table I–1: Summary of Existing PTC Toll Locations

Highways	Un-staffed Diamond Interchange Ramp Plazas	Staffed Trumpet Interchange Ramp Toll Plazas	Slip Ramp Plazas	Mainline Barrier Plazas	Total Toll Plazas
Findlay Connector	6	0	0	0	6
Amos K. Hutchinson	8	0	0	1	9
Beaver Valley Expressway	6	0	0	2	8
Mon-Fayette Expressway	16	0	0	4	20
Northeastern Extension	0	6	1	4	11
Turnpike Mainline	0	27	3	3	32
Total	36	33	2	14	85

Traffic on the system has grown from approximately 160 million vehicles annually in 2000 to 190.6 million annually in 2014 (or 19.1 percent). This equates to over half a million motorists per day, generating more than $877 million in revenue annually. Currently, the Commission employs a variety of methods of toll collection across the system. The cash options include the original method of stopping at a booth to pay a collector the cash amount due or, on some Turnpike facilities (including Beaver Valley Expressway, Mon-Fayette Expressway and Findlay Connector) depositing coins into a machine. In 2014, in addition to cash and E-ZPass, the Commission introduced the use of credit card machines as a pilot program as an additional form of payment at the Willow Hill interchange.

In 2000, the Turnpike made a shift from an all cash collection system, to offering motorists the option of using E-ZPass, an electronic toll collection option by which transponders mounted on vehicles register tolls electronically. E-ZPass customers have the option to use regular cash lanes or E-ZPass Only lanes at any toll plaza, with the added benefit of not having to stop to pull a ticket or pay a toll collector. Additionally, at five (5) toll plazas, the Commission has implemented E-ZPass Express Lanes, where E-ZPass holders can travel in barrier separated, open road tolling (ORT) lanes at a higher speed through the plaza.

As part of a staged approach to the implementation of cashless tolling, the Commission introduced the first cashless tolling location at the new Delaware River Bridge toll plaza in the east beginning in early 2016 and complete the conversion in late-2017. Cashless tolling will begin in the west with "in-place" implementation (toll plazas remaining, but new equipment installed allowing for cashless tolling). Implementation will start with 6-month incremental conversions of the Beaver Valley Expressway (BVE), Amos K. Hutchison Bypass (AKH) and Mon-Fayette Expressway (MFE). The Commission may then choose to implement "in-place" cashless tolling on the Mainline Ticket System and Northeastern Extension using the existing infrastructure (tentatively by July 2019) before implementing a full highway speed mainline conversion. The mainline conversion to cashless tolling is anticipated to be implemented in 2 year increments based on geographical region beginning with the Eastern Region as early as 2020 and progressing to the deployment of the Central/North Region then ending with the deployment of the Western Region.

The annual number of new account openings has increased since E-ZPass was implemented in 2000, from around 80,000 accounts (in 2001, the first full year of service) to over 219,000 new accounts in 2014, bringing the total number of accounts to over 1.5 million. The revenue collected from E-ZPass customers total over 70 percent of the total revenue and 74 percent of the transactions for the system.

With the exception of the Findlay Connector plazas, which were installed and now maintained by Xerox, the rest of the Commission toll plazas and the host systems were installed by TransCore and are currently maintained by TransCore.

1.2 Overview of Scope of Work

In the future, tolls will be collected via non-stop cashless tolling. This will be accomplished via the installation of new gantries (using a multiple gantry option as well as space frame design) over the mainline of the various Turnpike highways. The mainline toll points will consist of sites with either a multiple span gantry design or a space frame design option. The baseline Contract for this Scope of Work

will be the newly constructed Southern Beltway and the conversion of the Findlay Connector in late 2019, which will be the baseline for this RFP. This will include three (3) tolling locations in each direction for a total of six (6) cashless toll zones using an anticipated space frame gantry design.

All potential future facilities listed below will be considered optional additions to this Scope of Work, as will be indicated throughout this document. Full conversion to mainline cashless tolling may occur as future implementations at various Turnpike highways at dates and locations to be determined.

Potential Facilities (with example estimated numbers of locations):

- Mainline Turnpike– Additional twenty eight (28) tolling locations for fifty six (56) cashless toll zones.
- North Eastern Extension – Additional ten (10) tolling locations for twenty (20) cashless toll zones.
- Beaver Valley Expressway – Additional four (4) tolling locations for eight (8) cashless toll zones.
- Mon-Fayette Expressway – Additional twelve (12) tolling locations for twenty four (24) cashless toll zones.
- Amos K. Hutchinson Bypass – Additional five (5) tolling locations for ten (10) cashless toll zones.
- Other Facilities– Additional locations not currently part of the system but may be implemented or operational at future dates.

In total, one projection of the number of tolling locations could potentially include fifty nine (59) segments with one hundred eighteen (118) tolling points (in each direction on the segment) throughout the Commonwealth of Pennsylvania. The locations could span the I-76 Mainline from the New Jersey border in the East to the Ohio border in the west, the Northeastern Extension from the Philadelphia region in the south to the Scranton area in the north or to any of the extensions from the West Virginia border to the Pittsburg area. The Contractor should consider geographic and staffing requirements to install and maintain a system of the proposed magnitude should any or all of the optional implementation scope be exercised by the Commission.

The requirements described in this Scope of Work include the System concepts, technical, and Maintenance, requirements for the Design; development; fabrication; assembly; programming; integration; testing; installation; Commissioning; transition, and Implementation of the PTC Cashless Tolling System, including without limitation in-lane Cashless Tolling Systems, Toll Host System, Digital Video Audit System (DVAS), Maintenance Online Management System (MOMS) and Maintenance Services for the Cashless Tolling System. *Attachment 1: Cashless Toll Zone Locations* provides a listing of the toll zones that are planned for implementation for this Scope of Work (including optional facilities).

The Contractor shall be responsible for furnishing and mobilizing all required equipment, facilities and resources to carry out this Scope of Work and to meet Contract requirements. This includes but is not limited to:

- mobilization;
- local office space;
- installation equipment storage;
- demobilization and site clean-up;
- all permits;
- licenses;
- fees;
- insurance and bonds;
- coordination and cooperation with the different civil contractors;
- coordination and cooperation with existing contractors;
- development and production of documentation;
- Design drawings, Plans and schedules;
- Installation;
- training;
- testing;
- safety;
- security and
- Quality assurance and quality control.

The Project shall include, but not be limited to, the Design; development; configuration; customization; procurement; manufacturing; testing, installation and Commissioning of Cashless Tolling System Hardware and Software, which includes interfaces to the existing Customer Service Center (CSC)/Violation Processing Center (VPC) system, the PTC host system and SAP. The System shall meet the specifications as further detailed in this Scope of Work. All equipment and Hardware furnished under this Contract shall be readily available to the Commission. The Commission reserves the right to procure all third party hardware for the Cashless Tolling System and the Contractor shall take delivery and responsibility for the Commission purchased hardware.

The following items are included in this Scope of Work:

- Implementation of Cashless Tolling In-lane Systems at the Plazas identified in *Attachment 1: Cashless Toll Zone Locations*.

- The Cashless Tolling In-lane Systems consist of the primary subsystems and functionality listed below:
    - Automatic Vehicle Identification (AVI) system;
    - Automatic Vehicle Classification (AVC) system;
    - License Plate Image Capture and Processing System (LPICPS), including Optical Character Recognition (OCR)/ Automatic License Plate Recognition (ALPR) (optional);
    - zone controller;
    - facility servers (if provided);
    - Digital Video Audit System (DVAS) for detailed transaction audit;
    - consolidation of video images and transactions and reconciliation of their transmission status;
    - interface to the Cashless Toll Host System for the transmission of transactions/messages and alarms, and receipt of toll rate tables, Transponder Status List (TSL), user identification list (UIL) and Violation Enforcement List (VEL) (if exercised) and
    - Interface to the existing CSC/VPC system for the transmission of video transactions, images and license plate results (optional).

- The Cashless Toll Host System consists of the primary subsystems and functionality listed below:
    - Dashboard for monitoring transactions, alarms and system operational status.
    - management function to support the lane operations such as the ability to change the lane operating mode and manage toll rate schedules;
    - fully integrated MOMS for tracking inventory, alarms, work orders and Maintenance activities;
    - communication with the Cashless Tolling In-lane Systems for the transfer of transactions, messages, alarms, toll rate tables, transponder status file and VEL (if exercised);
    - communication with the PTC host system for the transfer of transactions and alarm data;
    - communication with the existing CSC/VPC system for the transfer of AVI transactions, TSL, VEL (if exercised), Exception List, toll rate tables and GL files;
    - communication with SAP for the transfer of GL files, work order creation and disposition and Equipment inventory data, and
    - communication with the In-lane Systems for the reconciliation of video transactions and images and their transmission to the existing CSC/VPC system.

- At each tolling point the Contractor shall procure, furnish and install equipment racks inside the toll equipment building provided by the civil contractor. The civil contractor will also provide the generator, the Uninterruptable Power Supply (UPS) and conduits/raceway required from the toll equipment building to the toll gantry. The Contractor's installation responsibilities at the tolling points are as specified in *Attachment 2: Cashless Tolling Installation Responsibility Matrix*. All equipment racks/cabinets that house Cashless Tolling System electronics shall be provided by the Contractor and installed inside the toll equipment building.

- The communications network for the entire PTC Wide Area Network (WAN) is provided by the Commission as shown in *Attachment 3a: Existing PTC Communications System Architecture*. The Contractor shall be responsible for providing the Local Area Network (LAN) and the required network interface Equipment to connect the Cashless Tolling In-lane Systems as shown in

Attachment 3b: PTC Communications Network Responsibilities. The Commission shall make available a designated number of ports, as specified during the Design phase, to the Contractor to allow access to the Commission WAN through the Commission administered firewall to establish the connection from each tolling point to the primary and secondary Cashless Toll Host locations and the existing CSC/VPC systems. The Contractor shall work with the Commission to make the connection to the WAN.

- The Contractor shall be responsible for providing Maintenance, Software Support Services and Information Security for the Cashless Tolling System as further specified in this Scope of Work.

- The Contractor shall support all E-ZPass Group and interoperable activities as required by the Commission as change order work where not applicable within this Scope of Work. Activities may include but are not limited to:
    - attend technical meetings;
    - review and provide comments on E-ZPass Group documents;
    - support E-ZPass Group Agency testing as requested;
    - support changes to the System to meet modifications to E-ZPass Group specifications, and
    - be compliant with the latest published E-ZPass Group specifications for the duration of the Contract.

II. FUNCTIONAL REQUIREMENTS

2.1 In-lane Systems Functional Requirements

This section defines the In-lane requirements of the Contractor Scope of Work. Each Segment of the Highway has a tolling point which could have one or two toll zones and tolls are collected in each direction of travel at the toll zones. At the toll zones identified, the Cashless Tolling Equipment and electronics shall be installed on toll gantries and in the toll equipment building provided by the civil contractor. The types of toll gantry conceptual details at each of the toll zones are provided in *Attachment 5: Concept Plan for Overhead Structures/Toll Gantries.* The Contractor shall work with the Commission, the civil designer and civil contractor on requirements for all civil design and construction work to be performed by others on the Project, including the design and location of equipment mounting locations and retractable mounting arm(s).

2.1.1 Cashless Tolling System Hardware

2.1.1.1 *General Requirements*

1	All Hardware and Equipment supplied under this Contract, including consumable material (material that requires periodic replacement/replenishment), shall be new and certified to have a ten (10) year minimum service life. Materials and products that have been previously used for development work or the Contractor's internal testing, or items that have been salvaged or rebuilt shall not be permitted to be used in connection with this Contract.
2	All components, supplies and materials furnished under this Contract for the Cashless Tolling System shall be new, Commercial Off-the-Shelf (COTS) and to the extent possible, field proven, and in revenue operations to the extent possible.
3	All components procured, furnished, and installed by the Contractor shall be available through multiple sources identified by the Contractor to the extent possible and the names of such sources shall be readily available to the Commission. The Commission shall have the right to purchase third-party Equipment directly from the Equipment vendor.
4	All Hardware and Software provided under this Contract shall be supported by their manufacturer, upgradeable, maintained, updated, patched and secured throughout the term of the Contract.
5	Proof of purchase in the form of purchase orders, dated invoices and shipping bills shall be retained by the Contractor and furnished to the Commission in accordance with the requirements of this Scope of Work and Contract.
6	All Commission standards in accordance with the requirements of this Scope of Work shall be maintained throughout the term of the Contract. Standards include but are not limited to, IT security, data retention, Software and Database design and development, installation, change management, testing, maintenance and protection of traffic (MPT) and safety.

2.1.1.2 *FCC License*

7	The AVI system shall comply with all applicable Federal Communications Commission (FCC) regulations.
8	It is the Contractor's responsibility to prepare the required application and the Commission will obtain the required FCC licenses for all AVI equipment provided under this Scope of Work and Agreement. The Commission has the FCC licenses for the existing AVI systems.
9	The Contractor shall, as part of this effort, identify and accommodate any site conditions that may potentially degrade the performance of the AVI system.
10	Under all circumstances it is the Contractor's responsibility to comply with the AVI performance requirements of this Scope of Work and Agreement and no relief in such performance shall be provided.

2.1.1.3 *Maintainability*

11	The Cashless Tolling System Hardware shall be designed with the following specifications:
	• modular, replaceable and repairable components to allow for efficient Maintenance;
	• all replacements shall be plug compatible with no changes required;
	• all components that perform the same function shall be interchangeable;
	• all zone controllers shall be designed such that they are identical and can be configured to operate the specific number of lanes at each toll zone as shown in *Attachment 1: Cashless Toll Zone Locations* through the addition of Hardware pluggable modules and setting of appropriate Software parameters;
	• where possible, there shall be a second source for all parts and components and it shall be identified in the Bill of Materials (BOM) unless otherwise Approved by the Commission;
	• all electronic components shall be installed in equipment racks and installed inside the toll equipment building at each toll zone/toll point as applicable;
	• zone controllers shall be expandable at a minimum to add two (2)additional in-lane devices;
	• Contractor's electronic Design and installation shall prevent electrical disturbances and noise in the electronics;
	• ISO standard I/O interface modules shall be used in the Design and all serial, discrete and network interface boards shall have at minimum two (2) spare slots to support the addition of components;
	• all exposed junction boxes, pull boxes and other hardware shall be either zinc coated and epoxy painted or stainless steel;
	• all field wiring shall be terminated on screw lugs or connectors and all connectors shall be keyed or polarized to prevent incorrect connections;
	• all wiring and connectors shall be labeled and strain relief shall be provided to protect the conductors;

	• surge suppression shall be provided for all field wiring susceptible to lightning or similar surges;
	• all lane Equipment shall be fused and protected against over current, over voltage, under voltage and lightning;
	• redundant power supplies shall be provided for all required internal DC voltages, and
	• all Equipment shall be properly grounded to ensure the safety of Maintenance personnel.

2.1.1.4 *Diagnostics*

12	Equipment mounting and installation design shall support the maintenance of Equipment from above and from below on toll gantries as applicable to each cashless toll zone.
13	Maintenance personnel shall have easy access to major subsystem components, and removal, testing, and replacement shall not require tools. Components mounted on overhead structures shall also be capable of tethering to secure points during removal or placement during replacement activities such that items cannot be dropped. All test points necessary to diagnose the Equipment while in operation shall be easily accessible and light emitting diode (LED) indicators shall be provided to assist technicians to identify and diagnose problems.
14	Technicians shall have the ability to connect a laptop authorized by the Commission in accordance with Commission policies to troubleshoot the components. Technicians shall have secured remote access to the device to monitor its status and to perform diagnostics when the lane is in operation.
15	For easy diagnostic and trouble shooting, all error and event logs shall be consolidated such that all events and errors associated to a transaction are in a single log. The consolidated error and event logs shall be retained online for a configurable period of time and shall be easily accessible to the technicians.
16	The consolidated error and event logs shall also be transmitted to the MOMS and available to Authorized Users in viewable form. Search and filter capability shall be provided to display and review data in the consolidated log.
17	All diagnostics performed shall be recorded and automatically reported to the MOMS, including the technician ID, the time the Maintenance was performed, and all status and recovery messages.
18	All diagnostic Software and specialty tools required for support of Maintenance activities shall be supplied by the Contractor and the Commission shall have full rights and access as further defined in the Contract. All Software and operating systems shall meet the Commission's most current technology standards; all such Software and equipment shall meet Commission IT security standards.

2.1.1.5 *Customized Hardware*

19	If customized components or controllers are used, the Contractor shall provide detailed documentation on the Design, production and testing of these units and shall provide usage

	rights to the Commission. Documentation shall include electronic diagrams, component layouts and the detailed Bill of Material listing manufacturers/vendors. The Contractor shall identify all customized components and controllers and indicate their plan to make them available for the term of the Contract, including the option for placing in escrow.

2.1.1.6 *Equipment Racks*

20	All in-lane Equipment controllers and Cashless Tolling System electronics, devices, servers and associated communications Equipment shall be installed inside dedicated toll equipment racks that are housed within the toll equipment building according to a layout Approved by the Commission IT Department. The Contractor shall purchase and install the equipment racks in accordance with the requirements of this section.
21	It is the Contractor's responsibility to provide the equipment racks of the correct size that meets the requirements of this Scope of Work. Equipment racks shall have adequate space (twenty five {25} percent extra) for added boards, servers and components for future expansion.
22	The equipment racks shall support the Cashless Tolling System components for a minimum of ten (10) years. The equipment racks shall not be used to support peripheral non-toll related equipment.

2.1.1.7 *Environmental*

23	The Cashless Tolling System Equipment to be supplied will be installed in areas exposed to the range of climatic conditions found in Pennsylvania. In addition to the climatic conditions, the Equipment will also be subjected to harsh environmental factors normally found in the operation of a toll lane, such as, but not limited to: car, truck, and bus emissions; deicing materials, industrial exhausts; industrial cleaners; gasoline and car lubricants; Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI), and vibrations. These conditions shall be taken into account in the Design and selection of Equipment used on this Project and the Contractor shall ensure that the System works accurately and reliably in such environment.
24	Lane electronics, zone controllers, LPICPS controllers/servers and other components shall be able to operate in the sealed and enclosed environment of the equipment racks installed within the toll equipment building.
25	All Hardware provided under this Contract shall be corrosion resistant and remain corrosion resistant for the term of the Contract.
26	The in-lane Equipment not in environmentally controlled conditions shall operate with no degradation of performance in ambient air temperature of negative thirty (-30) to seventy (70) degrees Celsius, with and without direct sunlight, and relative humidity of five (5) to one hundred (100) percent for Equipment installed in an outside environment and five (5) to ninety-five (95) percent non-condensing for Equipment installed inside equipment racks.

27	During the Design phase, the Contractor shall provide specification sheets that prove the zone controller and other lane electronics meet the environmental specifications given above. Results of all environmental tests conducted and certification of compliance shall be provided to the Commission for Approval.
28	All exposed or in-lane Equipment, when in its fully assembled configuration, shall not be damaged, nor shall operational performance or expected lifetime be degraded. During Design phase, the Contractor shall provide specifications for the in-lane Equipment for Commission Approval.

2.1.1.8 *Assembly*

29	All customized Hardware shall be assembled and tested in the Contractor's fabrication/assembly facilities before being installed in the lane in accordance with the Commission's Approved test plan for customized Hardware. All chassis, attachments, and Hardware shall be fabricated stainless steel, hot dipped galvanized or other materials resistant to salt exposure and corrosion.
30	All customized Hardware shall be identified and shall undergo a seventy-two (72) hour burn-in test before they are installed in the lanes, in accordance with the Commission's Approved test plan.
31	Customized Hardware assembly shall facilitate replacement of failed components in accordance with requirements of this Scope of Work.

2.1.1.9 *Bill of Materials*

32	The Contractor shall include the BOM for all Equipment and Hardware supplied for the Cashless Tolling System. Each component shall also include the second manufacturer source and any exceptions shall be noted and explained. During the Design phase the BOM shall be finalized and all changes shall be subject to the approval of the Commission.
33	Prior to purchase of any Equipment and as part of its Design the Contractor shall submit the final BOM to the Commission for Approval. No equipment shall be purchased by the Contractor prior to Approval of the BOM and the Design, unless otherwise authorized in writing by the Commission.
34	All Hardware and Software procured under this Scope of Work shall be confirmed to be the latest model/version at the time of purchase with the required warranty, security, Maintenance and support Services.
35	Updates to the BOM shall be provided by the Contractor whenever changes occur and at a minimum on a semi-annual basis over the term of this Contract.

2.1.1.10 *Spare Parts and Support*

36	The Cashless Tolling System procured, furnished, and installed under this Contract shall allow the Contractor to Maintain and replace parts for the term of the Contract. The Contractor shall provide a spare parts list the cost to the Commission (inclusive of shipping) and recommended quantities for all Hardware supplied for the Cashless Tolling System for each year of the Contract.
37	This Contract shall include the initial purchase quantities of spare parts required for the operation of the tolling points during the Warranty period as recommended by the Contractor. Costs for the replacement of spare parts during the Warranty period shall be the responsibility of the Contractor.
38	At the end of the Maintenance term, all spare parts inventory shall be turned over to the Commission at one hundred (100) percent of the required inventory level. The Contractor shall identify (via the MOMS) the warranty status for each piece of Hardware and warranty period remaining, if applicable.

2.1.2 Cashless Tolling System Software

39	The operating system, database, other third-party Software, and Cashless Tolling System Software procured, furnished, and installed by the Contractor shall support real time operations of the lane and shall be field proven.
40	The operating systems shall have a future upgrade path and shall be supported for a minimum of ten (10) years. The Contractor shall ensure that the risk of obsolescence to the Hardware is minimized through the selection of the operating system Software and the peripheral Hardware.
41	All Cashless Tolling System Software developed, furnished, and installed under this Contract shall be warrantied against Software defects, security vulnerabilities and deficiencies for the term of the Contract and as described within the Contract and associated attachments.
42	The vendor shall have an annual information security risk assessment and a vulnerability scan performed by a third party, in consultation with Commission IT Security, and provide the results to the Commission.

2.1.3 Cashless Tolling System Lane Configurations

43	The Cashless Tolling System shall support the toll zone types, lane configurations and dimensions detailed in *Attachment 1: Cashless Toll Zone Locations*.
44	Travel lane widths shall be assumed to be standard twelve (12) feet in all lanes. Shoulders widths for each toll zone are detailed in *Attachment 1: Cashless Toll Zone Locat*ions. Shoulder lanes that are eight (8) feet or greater shall be fully equipped as a travel lane. Shoulder lanes that are less than eight (8) feet shall have vehicle detection and image capture Equipment to detect and capture vehicles straddling the shoulder.
45	During the detailed Design, the Contractor shall make the required adjustments to the System

	Design to accommodate for variations in the actual lane widths.

2.1.4 Toll System Access Requirements

2.1.4.1 *Toll System Software Security*

46	Access to information on the Cashless Tolling System and network shall be password controlled. The access shall be role based and limited to the authorized Contractor staff and designated Commission personnel.
47	Accounts for user access to the System shall require a strong password and be compliant with Commission IT security standards and requirements.
48	User access security, including sign-on facilities, permission control and access privileges for different levels shall be provided for the files, directories and application Software and shall be fully configurable by a system administrator. Access to all systems needs to be controlled through a central repository with each user having an unique log-in.
49	User sign-on, access and access failures, both local and remote, to any element of the Cashless Tolling System shall be recorded and tracked for security audit proposes and reported to the MOMS. The System shall continuously and automatically monitor for unauthorized access; violations shall be reported to the MOMS as priority 1 Alert. These reports should be provided to Commission IT Security within twelve (12) hours of discovery.
50	The Contractor shall develop the access levels, user roles and privileges matrix during System Design with the Commission input, including review by Commission IT Security, and Approval. The System shall allow for addition and changes to the access levels, user roles and the addition of personnel in a secure manner.
51	A system level account shall be provided for Commission security systems to perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool. Additionally, Commission IT Security can request the Contractor to perform any scans and ensuing reports through the term of the Contract.
52	The Contractor shall not circumvent the Commission Approved System security. All access to the System and Approved changes made shall be recorded, monitored, reviewed and audited by the Commission. Specific requirements shall be developed by the Contractor during System Design.
53	Authorized Users shall have access to the zone controller user access logs to audit the system access.

2.1.5 Cashless Tolling In-lane Subsystems

2.1.5.1 *Automatic Vehicle Identification (AVI) System*

54	The Contractor shall provide an AVI system that is compliant with the E-ZPass Group interoperability requirements at the tolling points specified in this Scope of Work.

55	The Commission will procure the antennas and the readers as specified by the Contractor through a certified E-ZPass Group vendor. The Contractor shall take delivery of the equipment and the Contractor shall be responsible for the AVI equipment installation and maintenance upon delivery.
56	The Contractor shall furnish and install all other Hardware, cabling and associated mounting fixtures to form a fully functioning AVI system that meets the requirements of this Scope of Work.
57	The Contractor shall be responsible for the physical tuning of the certified AVI Equipment, and integrating the AVI system into the Contractor in-lane Design. In addition, the AVI vendor shall certify that the lanes are tuned to the Approved AVI specifications. All AVI installation, configuration and tuning shall be in compliance with the certified E-ZPass Group vendor requirements.
58	The Contractor is responsible for synchronizing all AVI readers that are in close proximity to the tolling points as required by the certified AVI manufacturer.
59	The AVI system shall provide full coverage in all areas of the toll zone to read and report transponders. Transponders on vehicles straddling the shoulders that are less than eight (8) feet shall be read and reported to the zone controller. The Contractor shall support adjustments to the antenna quantity and placement based on the final shoulder configuration.
60	The Contractor shall maximize any inherent redundancy built into the AVI readers whereby the failure of the master or primary reader will result in the reporting of the transponder reads via the slave or secondary reader.
61	The AVI system shall be able to read the transponder, write to the transponder and report all E-ZPass Group interoperable transponders on vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane, traversing lanes and straddling lanes with no interference or degradation of performance. Non-E-ZPass Group interoperable transponder reads shall also be reported and flagged if the AVI system is capable of reading such transponders.
62	The AVI system shall have the ability to process transponders mounted on vehicles traveling in stop and go and bumper-to-bumper traffic and vehicles traveling at speeds of up to one hundred (100) miles per hour.
63	The read zones in the lanes at a toll zone shall be tuned such that transponders in vehicles traveling through the lanes in the opposite direction of travel are not reported by the AVI system.
64	The AVI system shall buffer transponder reads when it is unable to communicate to the zone controller. When communications are restored, the Buffered Transponder Reads shall be reported to the zone controller.

65	If more than one transponder is present in a vehicle, the AVI system shall have the ability to accurately read, write to and report multiple transponders that are compliant with the E-ZPass Group and future National Interoperability (NIOP) requirements. The zone controller shall properly associate the first read Commission transponder that has a valid status at the time of the transaction to the vehicle and report the additional transponders in the transaction. If both transponders have a valid status the zone controller shall associate the first read to the vehicle and report any additional transponders in the transaction. Additional transponder reads transmitted to the Cashless Toll Host System shall be reported to the existing CSC/VPC system according to the Business Rules.
66	The Contractor shall use the full capability of the selected AVI system to obtain AVI system status in accordance with the manufacturer specifications and report such status to the MOMS. Loss of communication to any element of the AVI system shall be immediately detected by the zone controller and reported to the MOMS. The Contractor-provided monitoring logic shall specifically detect any failures and generate alarms when failures are detected.
67	The Contractor shall provide maintenance tools to support remote lane tuning, diagnostics and other configuration changes. Setup and configuration of the AVI system shall be achieved remotely and shall not require lane closure except for major lane tuning, when initially installed or when a reader or antenna is replaced.

2.1.5.2 *Automatic Vehicle Classification (AVC) System*

68	The Contractor shall analyze the site conditions and Design, procure, furnish and install the required sensors and Hardware on all lanes at the specified Cashless Toll Zones as part of the AVC system that performs in accordance with performance requirements set forth in this Scope of Work under all weather conditions. The AVC system shall accurately detect, classify and separate vehicles spaced as close as three (3) feet apart traveling in stop and go and bumper-to-bumper traffic and vehicles traveling at speeds up to one hundred 100 miles per hour.
69	The AVC system shall determine vehicle axle count or axle count and vehicle dimensions, and classify vehicles in accordance with the Commission vehicle classification structure described in *Attachment 4a: PTC Proposed AVC Class Structure and Silhouette* based on the type of toll location. Classification of vehicles traveling on the shoulders of less than eight (8) feet width is not required; however, the System shall detect vehicles that travel on the shoulder and trigger the LPICPS.
70	The AVC system shall have the ability to detect trailer hitches and ensure that vehicles with a trailer in tow are reported as one unit to the zone controller as part of the vehicle transaction data.
71	The AVC system shall determine the speed of the vehicle and report the speed to the zone controller as part of the vehicle transaction data.
72	The Contractor shall ensure that there is sensor coverage at all areas of the toll zone to accurately detect and report vehicles traveling the shoulder and vehicles straddling lanes.

73	The AVC system shall provide vehicle event messages and signals, and vehicle classification data to the zone controller. Exception conditions processed by the AVC system shall be included in the transaction data, for example vehicle straddling the lane.
74	The Contractor's proposed AVC system shall have redundancy whereby AVC continues to function in the event any element of the AVC system fails or is degraded. The failure of a single sensor shall not prevent the lanes from processing vehicles or impact the System's capability to accurately associate transponders and to capture and process images.
75	The AVC system shall report its health to the zone controller and shall provide status when polled. Loss of communication to any element of the AVC system shall be immediately detected and reported. All health and failure status messages shall be transmitted and reported to the MOMS. In the event the primary AVC sensor fails, then the secondary sensors shall be used to capture and process images in accordance with the Commission Business Rules.
76	In the event there is a Class Mismatch between the AVC system and the transponder class, as defined by the Commission Business Rules during the Design phase, an image of the vehicle shall be captured and processed. The ability to enable or disable image capture for a Class Mismatch shall be configurable.

2.1.5.3 *License Plate Image Capture and Processing Systems (LPICPS)*

77	The Contractor shall Design, procure, furnish, and install all necessary front and rear LPICPS Hardware and Software required to support the video tolling and video processing requirements as set forth in this Scope of Work.
78	High resolution front and rear cameras shall be utilized for performing the OCR/ALPR.
79	Contractor shall install high resolution front and rear color ALPR cameras to meet the requirements of the Scope of Work. The Contractor shall install high resolution front and rear color cameras to provide one hundred (100) percent image capture during individual camera failures and excessive glare conditions.
80	The LPICPS shall capture and process vehicles traveling in stop and go and "bumper-to-bumper" traffic, vehicles traveling at speeds up to one hundred (100) miles per hour, and vehicles with separation as close as three (3) feet apart.
81	The Contractor shall ensure that there is shoulder coverage and vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane, traversing lanes and straddling lanes, shall be accurately detected and their images captured and processed in accordance with the Commission Business Rules.
82	The LPICPS shall buffer images (retaining an image until its disposition is known) such that no image is lost in order to support multiple vehicles in the lane and in accordance with the Commission Business Rules.

83	The Contractor shall procure, furnish, and install cameras, lighting, necessary image triggers, backup triggers and the necessary camera control Software to automatically adjust the cameras to accommodate varying light and weather conditions to maintain adequate brightness and contrast settings, with or without traffic, to ensure optimum license plate information capture under all conditions and time of day.
84	The system shall associate all images captured for a single vehicle to the vehicle transaction including multiple images captured by a camera.
85	Lights installed in support of the cameras shall not distract motorists traveling in either direction in the lanes. Contractor shall make no assumption of ambient light and the system shall function without any degradation regardless of the ambient light.
86	The Contractor shall procure, furnish, and install the necessary redundant controllers/servers to support the in-lane LPICPS Equipment and such servers shall be separate of the zone controller servers.
87	The Contractor shall provide robust industrialized computers and operating systems (PC's or workstation-type operating systems are not permitted) sufficient processor speed and memory to process vehicles in real time to meet the speed and traffic volumes as specified in this Scope of Work.
88	The LPICPS controllers/servers shall support standalone operations and be sized to store a minimum of thirty (30) days of images and data per lane at each of the toll zones under normal operating conditions.
89	The LPICPS shall perform with no degradation under conditions where every vehicle is considered a video transaction (100 percent video transaction). Under these conditions the System shall store images at the lane level for minimum of seven (7) consecutive days per lane. The System shall provide a configurable setting for the processing of one hundred percent (100) percent of video transactions.
90	When the storage utilization on the LPICPS controllers/servers reaches a configurable percentage (for example 80 percent), a message shall be transmitted to the MOMS. Images shall be deleted only after it is confirmed/acknowledged that the images have been successfully transmitted to the image server(s). Any deletion of images shall be automatic, without user intervention, and shall generate a message to be transmitted to the MOMS (configurable).
91	The LPICPS controllers/servers architecture shall have full redundancy such that failure of a processor, board, power supply, disk, communications or other critical component does not result in loss of images and data.
92	In the event communications to the LPICPS are lost or any LPICPS Hardware becomes non-operational, the Contractor's Design shall ensure that no images and/or data are lost and that all images and associated data are saved to a backup controller/server and transmitted to the image server(s) upon restoration of communications.

93	The Contractor's Design shall guarantee transmission of the video transactions, images and license plate results (optional) from the lanes to the image server(s) and from the image server(s) to the existing CSC/VPC system.
94	The System shall provide the capability to reconcile images to the transaction data and verify one hundred (100) percent transmission of video transactions and images to the existing CSC/VPC system.
95	If the Contractor solution includes toll rate determination within the In-lane Systems, then the video transactions may have the toll rates assigned to each transaction as specified in the Approved interface control document (ICD).
96	The Contractor's architecture shall support the image throughput requirements specified in the Scope of Work.
97	The LPICPS shall be capable of continuously performing diagnostics and reporting its health to the zone controller and the MOMS. Loss of communication to any element of the LPICPS shall be immediately detected. All health, failure and recovery status messages shall be transmitted and reported to the MOMS.
98	The LPICPS shall be capable of transferring video transaction data, images and license plate data to the image server(s) or the existing CSC/VPC systems in real-time or in batch mode as determined by the Commission to efficiently utilize the limited network bandwidth.
99	Software tools shall be provided that allow Authorized Users to verify the image quality in real-time and adjust and tune the images remotely.

2.1.5.4 *Optical Character Recognition (OCR)/Automatic License Plate Recognition (ALPR) – Optional*

If the option to provide OCR/ALPR Software is exercised, then the Contractor shall provide OCR/ALPR Software for determining the license plate data (number, jurisdiction and plate type) that results in the System meeting the requirements specified in the Scope of Work.

100	The OCR/ALPR Software may reside at the toll zone level, plaza level or the Highway level, as long as it meets the performance and functional requirements specified in this Scope of Work.
101	The System shall correctly identify the jurisdiction, plate type, special characters and stacked characters, and accurately determine the license plate number.
102	There shall be no backlog or failure in the processing of images for obtaining the license plate data (number, jurisdiction and plate type) and there shall be server redundancy whereby standby servers are available immediately and fully operational in the event of a failure.
103	The OCR/ALPR Software procured, furnished, and installed under this Contract can include Software that enhances and improves the accuracy and efficiency of the OCR/ALPR process. The System shall meet the OCR/ALPR performance requirements specified in this Scope of Work for license plates from States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA.

104	The LPICPS shall provide the capability of detecting image quality degradation in near real-time and generate alarms that are reported to MOMS when image quality impacts OCR/ALPR performance.
105	If a vehicle has two license plates or cameras capture multiple front and rear images for a vehicle, the region of interest (ROI) for all license plates shall be obtained and the license plate number from all plates shall be extracted and associated to the vehicle transaction.
106	Vehicles with two rear license plates shall be identified to allow the back-office to apply separate Business Rules for such transactions.
107	The images transferred to the existing CSC/VPC system shall include, at a minimum, the front and rear full uncompressed image(s) and the ROI.
108	Based on the OCR/ALPR results, the System shall identify the best license plate image that was used by the OCR/ALPR to obtain the license plate data including identification of front and rear images.
109	The data transmitted along with the image shall meet the Approved ICD and shall include, but not be limited to:
	• transaction data;
	• license plate data, including license plate number, jurisdiction and plate type;
	• confidence level of the OCR/ALPR results for individual characters and overall license plate number;
	• confidence level of the jurisdiction, and
	• enforcement notification status and action (if exercised).
110	For audit and Maintenance purposes, Authorized Users shall have the capability to view all the images in real time on any device connected to the Cashless Tolling System network and verify the OCR/ALPR performance.
111	For audit and testing purposes Authorized Users shall have the ability to perform image review, utilize image enhancement tools, and enter license plate data independent of the normal image processing workflow. A flexible user interface shall be provided that allows Authorized Users to select the image review criteria. Data entered through this process shall be transmitted to the Cashless Toll Host System for reporting.
112	All data entered through the independent image review process for testing and audit described above shall be saved separate from the normal production environment and shall be available to Authorized Users through reports. Such an audit process shall not impact normal operations and in most cases will occur after the images are transmitted to the existing CSC/VPC system.

2.1.6 Enforcement Notification – *Optional*

If the option to provide Enforcement Notification functionality is exercised, then the Contractor shall provide Enforcement Notification that results in the System meeting the requirements specified in the Scope of Work.

113	The Cashless Tolling System shall support the Maintenance and update of VEL that contains transponder numbers and license plate numbers that the Commission requires notification on. This could include repeat violators.
114	The VEL will be transmitted from the existing CSC/VPC system to the Cashless Toll Host System and from the Cashless Toll Host System to the lanes at frequent configurable increments and when changes take place.
115	The Cashless Tolling System shall provide the capability to alert applicable personnel if the System detects a transponder or license plate passing through the cashless toll zone that is identified for enforcement notification. The criteria for notification shall include the status of the transponder and presence of the license plate on the VEL.
116	Notification methods shall include but not be limited to text message, email or system to system interface.
117	The System shall alert applicable personnel within twenty (20) seconds of the vehicle passing through the toll zone if a vehicle on the VEL is identified. The transponder ID, transponder status, license plate number and jurisdiction shall be included in the Alert.
118	If an enforcement notification was successfully transmitted to applicable personnel, the transaction shall have a flag denoting the transmission of the enforcement notification. This enforcement transmission status shall be transmitted to the existing CSC/VPC system.
119	The System shall support the transmission of images (configurable) to the applicable personnel and shall include the image of the vehicle or just the ROI.

2.1.7 Zone Controller

2.1.7.1 *Zone Controller Hardware*

120	A fully redundant zone controller shall be Designed, procured, furnished, and installed at each of the toll zones. The redundant zone controllers shall have the identical configuration.
121	The zone controllers shall be installed in equipment racks and housed in the toll equipment building whether there is a single or dual toll equipment building at each tolling point.
122	When any Hardware and/or process on the primary zone controller fails preventing it from processing vehicles and creating transactions, the secondary zone controller shall automatically and immediately assume the functions of the primary zone controller. The failover from the primary zone controller to the secondary zone controller shall be transparent to the rest of the System and shall not require human intervention or the restart of any subsystems. Only one zone controller at a time shall generate revenue transactions.
123	Alarm messages shall be generated and reported to the MOMS when such a failover event occurs. The Contractor's failover Design shall ensure that there is no loss of revenue or transactions when one of the zone controllers fails.

124	The System shall provide Authorized Users the capability to manually and remotely failover the active zone controller to and from the primary zone controller to the secondary zone controller. All such events shall be recorded and transmitted to the MOMS.
125	The zone controllers shall be Hardened, industrial grade servers and the processor speed and memory shall be sufficient to process vehicles in real time to meet the traffic speed and volumes as specified in this Scope of Work.
126	Storage shall be sized to store a minimum of thirty (30) days of transaction and event data for each lane at the toll zone supported by the zone controller.
127	Proprietary zone controller Hardware will be considered for use, subject to the Commission's Approval. All drawings and instructions that enable construction and assembly, installation, repair, and modification of the Hardware, as well as sufficient property and use rights shall be provided to the Commission.

2.1.7.2 *Zone Controller Software*

128	The zone controller Software shall interface to the various devices and subsystems for each of the toll zone types specified in *Attachment 1: Cashless Toll Zone Locations* and perform all the functions as described in this Scope of Work for all Commission toll facilities.
129	The zone controller located at each toll zone shall process all of the data obtained from the other subsystems as described in this Scope of Work to generate a transaction record for each vehicle passage through the toll zone. The zone controller shall:
	• manage the TSL for all E-ZPass Group interoperable agencies used to validate the status of a transponder received from the AVI system;
	• use the data obtained from the AVI and AVC systems to assign the transponder read to the correct vehicle and frame the vehicle transaction accurately;
	• notify the LPICPS to capture and process vehicle images if no Valid Transponder read is obtained from a vehicle or if the Commission Business Rules require the capture of an image;
	• transmit the transaction record to the facility server (if provided) or to the Cashless Toll Host System, including but not limited to the following data: vehicle detection and classification data, transponder data, Equipment status data, and all other pertinent information regarding the transaction as specified during the Design phase;
	• transmit to the MOMS all alarm messages relating to the health of each subsystem, including the health of the primary and secondary (redundant) zone controller. Recovery messages shall also be transmitted and reported;
	• ensure that vehicle event data and transaction data shall be accessible to the DVAS, and
	• transmit to the facility server (if provided) or Cashless Toll Host System for further processing all other messages/events in accordance with Approved ICDs.

130	The zone controller Software shall be configurable and shall be able to support the Commission Cashless Tolling operational needs without requiring changes to Software. The configurable parameters shall be defined and documented during the Design process. All parameters shall have default values that shall be established during the Design process.
131	The Contractor shall propose appropriate Protocols and data structures to accomplish the communications required between various peripherals. These Protocols and data structures shall be fully detailed and documented, in Consultation with the Commission, by the Contractor during the Design process and Approved by the Commission.
132	Guaranteed transmission protocols shall be used for all messages exchanged between systems, including but not limited to:
	• zone controller;
	• LPICPS;
	• AVI system;
	• AVC system;
	• facility servers (if provided);
	• Cashless Toll Host System;
	• image server(s);
	• existing CSC/VPC;
	• DVAS;
	• MOMS, and
	• the PTC Toll Host
133	The Cashless Tolling System shall support the various lane configurations shown in *Attachment 1: Cashless Toll Zone Locations*. The zone controller application Software shall support all lane functions required to meet the Commission Cashless Tolling operational requirements.

2.1.7.3 *Zone Controller Start-Up*

134	Upon start-up or initialization the zone controller shall perform a self-diagnostics test to ensure full System operations. Alarm messages shall be reported for all failure conditions and a notification of the diagnostic check completion shall be displayed on the MOMS Dashboard. The failure of a critical system shall result in the toll zone operating under degraded operations in accordance with the Commission Business Rules.
135	Upon start-up, the zone controller shall verify with the facility server (if provided) or the Cashless Toll Host Systems that it has the latest configuration files; VEL (if exercised); TSL; and any other files required to support the lane operations. If the latest files are not present on the zone controller, it shall request the latest data from the facility server (if provided) or Cashless Toll Host Systems. If a zone controller is unable to get the latest files, an Alert shall be generated and sent to MOMS.

136	The zone controller shall also synchronize its time with the Commission time source and an Approved secondary source upon start-up and at established configurable intervals. The zone controller shall also support a secondary source for time synchronization.

2.1.7.4 *Lane Operations*

137	The Cashless Tolling System shall support various modes of operation that are managed and initiated by Authorized Users through the Cashless Toll Host.
138	Transactions shall be processed according to different Business Rules either at the lane level or the host level based on the mode of operation. The Contractor shall be responsible for ensuring that the AVI and video transactions are processed according to Commission Business Rules and transmitted correctly to the existing CSC/VPC system.
139	The Cashless Tolling System shall support the following modes of operations:
	• Open Mode: All transactions shall be processed normally in an open mode;
	• Maintenance Mode: Transactions created in Maintenance mode are processed as normal transaction but are identified as Maintenance mode transactions and transmitted to the Cashless Toll Host. Transactions that occur during Maintenance mode are not reported as traffic or revenue transactions.
	• Emergency Mode: Transactions created during emergency mode shall be identified as emergency mode transactions and processed in accordance with Commission Business Rules to be determined during the Design phase.
	• Save Image Mode: Capability shall be provided whereby Authorized Users can enable and disable a zone controller to save one hundred (100) percent of vehicle images processed through the LPICPS based on various selection criteria. Transactions under such condition shall be processed normally; however, these transactions and images shall be flagged with the save image mode and processed according to the Commission Business Rules (for example audit purposes).
140	When a lane is operating in a mode other than normal open mode, an Alert shall be generated and sent to MOMS at regular (configurable) intervals.
141	Authorized Users shall have the ability (local and remote) to configure the next operating mode and to gracefully shutdown the zone controller. Each time a mode change is requested an alert message shall be sent to the MOMS.

2.1.7.5 *Transaction Processing*

142	The zone controller shall detect, classify, and frame vehicles; assign the transponder accurately to the correct vehicle and capture and process the image of the correct vehicle in accordance with the Commission Business Rules and with the performance requirements specified in this Scope of Work.
143	The detailed transaction processing rules shall be defined and finalized during the Design phase; however, the following basic rules shall apply:

	• the System shall have the ability to process and record multiple transponders in a vehicle and associate each transponder to the vehicle transaction;
	• any non-E-ZPass Group interoperable transponder reads shall be reported to the Cashless Toll Host System;
	• a minimum of one revenue bearing transaction shall be created for each vehicle that travels through the toll zone and the zone controller shall ensure that the transaction is complete prior to transmitting it;
	• the zone controller shall be able to accurately identify, process, and track multiple vehicles in the toll zone;
	• the zone controller shall ensure that duplicate transponder transactions (same transponder ID) are not reported from the same lane or toll zone within a configurable period of time or consecutively;
	• Buffered Transponder Reads that are transmitted to the zone controller shall be processed but not be assigned to a vehicle by the zone controller and shall be flagged and reported to the Cashless Toll Host Systems for further processing and vehicle assignment;
	• the zone controller shall automatically synchronize with the various subsystems to ensure the events in the lane correspond to the transaction generated, and
	• the System shall incorporate self-correcting logic to adjust for lane anomalies and event synchronization issues.
144	The transaction message details shall be defined and finalized during the Design phase; however, the following basic rules shall apply:
	• The In-lane System shall transmit the video transaction to the existing CSC/VPC system for processing and billing.
	• the In-lane System shall transmit AVI and video transactions to the Cashless Toll Host Systems for processing, reporting, and reconciliation with the CSC/VPC;
	• the transaction message shall contain all data required by the existing CSC/VPC systems to process the AVI and video transaction;
	• each transaction shall contain various event times to help with transaction pre-processing and synchronizing events to a transaction including but not limited to: "vehicle entry" time; "LPICPS trigger" time; "transponder read" time; "transponder write" time, and "vehicle exit" time. Such event times shall allow transponder reads, images and transaction to be associated correctly with the vehicle, and
	• the System shall assign a lane number to each transaction and report the lane in which the vehicle was detected.

2.1.7.6 *E-ZPass Group Mapped Class*

145	The System shall utilize the raw E-ZPass Group class obtained from the transponder data and map that raw class to the Commission E-ZPass Group proposed axle+dimension mapped class in accordance with *Attachment 4b: E-ZPass Group Mapped Classes* to be finalized during the Design Phase.

146	The System shall retain the raw E-ZPass Group class and include that in the transaction data along with the E-ZPass Group mapped axle+dimension class for Commission.
147	If a transponder has a raw E-ZPass Group class that is not mapped to the Commission E-ZPass Group axle+dimension class then the transaction shall be assigned a default class (configurable).

2.1.7.7 *Revenue Vehicle Class (PTC Class)*

148	The assignment of the Revenue Vehicle Class in normal operations and in degraded mode of operations shall be in accordance with the Commission Business Rules. If no classification data is obtained, a configurable default revenue class shall be assigned to the transaction and the transaction shall be flagged.
149	The Revenue Vehicle Class shall be used to determine the fare amount for a transaction as defined by the Commission Business Rules. Flags in the transaction shall identify which class was used as the Revenue Vehicle Class.
150	The System shall have the capability to cap the maximum and minimum (configurable) axles and class and to charge a set toll rate per additional axle count.
151	Transactions shall include the raw E-ZPass Group class, AVC class, mapped E-ZPass Group class and Revenue Vehicle Class. The Revenue Vehicle Class assigned in accordance with the Commission Business Rules shall be used to determine the toll amount.

2.1.7.8 *Fare Determination*

Fare determination is not required at the In-lane Systems, and can be performed at the Cashless Tolling Host or PTC Toll Host. The Contractor solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions and shall meet the following requirements. Currently the existing CSC/VPC system assesses the toll for violation transactions and will continue to do so for video transactions; however, the Contractor can assign the toll to video transactions if the Contractor solution provides this capability.

152	Fare determination shall be performed at the In-lane Systems, the Cashless Toll Host system or the PTC Toll Host for all AVI transactions.
153	The Contractor solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions.
154	Fare determination may be performed at the In-lane Systems for all video transactions and may later be adjusted at the PTC CSC/VPC based on the transaction categorization, for example Video Image Toll (VToll).
155	Tolls shall be assessed using the toll rates and schedules established for each tolling point. The toll rate and class structure for the various toll facilities are not developed yet but the System shall support the toll rate and class structure for the classifications in *Attachment 4a: PTC Proposed AVC Class Structure and Silhouette* based on the toll location.

156	The System shall support the assessment of toll by payment type for example video, E-ZPass, and Non-Revenue; vehicle class and location.
157	Home Agency(Commission issued) non-revenue transponders shall be charged $0.00 (configurable) fare but Away Agency non-revenue transponders shall be charged the normal fare.
158	Class 1 motorcycles with valid E-ZPass transactions that use a Home Agency(Commission issued) transponder shall be charged a configurable discounted fare.
159	Motorcycles and other vehicles that qualify for discounted fare shall be identified by using the E-ZPass Group vehicle Type 2 which is comprised of E-ZPass Group class 136, 140 and 144. The category of E-ZPass Group class that qualifies for discounted fare shall be configurable.
160	Motorcycle discount fares shall be rounded to the nearest penny (configurable) but shall be no less than the minimum fare (configurable). Currently the minimum fare is fifty (50) cents.
161	The toll charged for E-ZPass transactions shall be based on Commission Business Rules developed during the Design phase and shall consider the operational status of the AVC.
162	Tolls charged for video transactions shall be based on AVC (if it is operational) or the default class and shall be defined during the Design phase.
163	Transactions shall be flagged if the vehicle class is estimated by the AVC system (for example, when the class is based on the vehicle profile).

2.1.7.9 *Saving of Images*

164	Images shall be captured and saved for the following conditions and as further defined during the Design process, including but not limited to:
	• in all cases where there is no transponder read (including when the AVI system is down or degraded), the transponder is not "valid", or a non- interoperable read is detected;
	• in all cases where there is a vehicle classification condition as determined by the Commission Business Rules, for example in conditions where the AVC class is estimated by the System;
	• if the LPICPS loses communications with the zone controller in accordance with the Commission Business Rules;
	• in all cases where there is a Class Mismatch between the transponder class and the AVC, as determined by the Commission Business Rules, and
	• in conditions where the "save image mode" is enabled.
165	Images saved during a LPICPS loss of communication event shall be flagged and subsequently matched with the correct transaction data when communication with the zone controller resumes. This matching can occur at the Cashless Toll Host but shall take place in a manner that does not interfere with or degrade real time zone controller operations.

166	If the AVC system is not operational but the LPICPS trigger is functioning, images shall be saved such that all non-valid transponder transactions that occur during the AVC malfunction can be subsequently pursued for collection. Sufficient data shall be provided in the transactions to allow the PTC CSC/VPC to process such transactions so that customers are not charged in error when lane operation is degraded.

2.1.7.10 *Configuration Files*

167	All parameters and settings required to run the zone controller application and the lane equipment shall be maintained in configuration files. Access to configuration files required to support the zone controller operations shall be limited to Authorized Users.
168	The configuration files shall be maintained at the toll zone and the Cashless Toll Host System for configuration and version control. All zone controllers shall have default configuration files that allow the lane to start-up automatically.
169	Authorized Users shall be able to make changes to parameters and settings that are defined as configurable in this Scope of Work and in the Approved Design documents. Authorized Users shall be able to make changes to the configuration files in the field. Changes to configuration shall result in an alert message to the MOMS. All changes made to the configuration files in the field shall be synchronized to the master configuration file that is maintained at the Cashless Toll Host.
170	Each zone controller shall automatically back up its critical configuration files to a backup server once a day to be used to rebuild the master drive in the event of hard disk failures.

2.1.7.11 *Zone Controller Interfaces*

171	The zone controller shall interface to various devices and subsystems to transmit and obtain data and synchronize the time.
172	The zone controller shall provide checks on all data it receives from each of the devices and subsystems it interfaces to and generate alarm messages that are reported to the MOMS.

Interface to AVI System

173	The zone controller shall interface with the designated AVI system in accordance with the Approved ICD and transmit all relevant transponder data received from the AVI system, as defined and Approved by the Commission during the Design phase, and reported as part of the vehicle transaction data to the Cashless Toll Host System.

Interface to AVC System

174	The zone controller shall interface with the AVC system to obtain vehicle events that shall permit accurate detection, classification, tracking and processing of vehicles. Vehicle class and speed information shall also be obtained from the AVC system and reported as part of the vehicle transaction data reported to the Cashless Toll Host System.

Interface to LPICPS

175	The zone controller shall interface with the LPICPS to capture and process images of vehicles in accordance with the Commission Business Rules to be developed during the Design phase. The vehicle data, OCR/ALPR results (if the option to implement OCR/ALPR is exercised) and images obtained from the LPICPS shall be transmitted to the image server(s) to support the Commission's video tolling and processing requirements and PTC E-ZPass CSC operations requirements.

Interface to DVAS

176	The zone controller shall interface with the DVAS to transmit event data for display on the DVAS. The event data shall include transponder reads and AVC event messages that are received as the vehicle travels through the lane.

Interface to Facility Server/ Cashless Toll Host System

177	The zone controller shall interface with the facility server (if one is deemed necessary) or directly to the Cashless Toll Host System to transmit lane data and to receive files, commands, messages and other data required for lane operations. Error detection checks shall be instituted on both systems to ensure incorrect or corrupt data is not inserted into the System. The Contractor shall work with Commission IT Security to develop a secure method of allowing this flow of data through a Commission firewall into the network.
178	The Cashless Tolling System shall include automated methods to determine when there is a loss of communications between the zone controller and the facility server (if provided) or Cashless Toll Host System; any failures detected shall be reported to the MOMS.
179	The Cashless Tolling System shall include automated methods to determine when there is a loss of communications between the zone controller and the image server(s); any failure detected shall be reported to the MOMS.
180	Receipt of all files and data shall be acknowledged; any transmission failures shall be reported to the MOMS.
181	The Contractor shall provide an automated means of synchronizing the zone controller and facility server (if provided) or Cashless Toll Host System messages in the event that the zone controllers are replaced, communications are down, or if data on the zone controller is not retrievable due to a catastrophic failure.

2.1.7.12 *Transmitting Data*

182	All messages generated at the zone controllers shall be transmitted to the facility server (if provided) or Cashless Toll Host System in real-time using a transport mechanism that performs error detection and correction to guarantee data transmission. All messages shall be uniquely identified and validated at the Cashless Toll Host System to ensure there are no missing or duplicate messages.

183	The System shall support exception handling in accordance with the Commission Business Rules Approved during the Design phase. An alarm shall be generated and reported to the MOMS for all failed transactions, exceptions and errors.
184	Failure of transmission of data to the facility server (if provided) or Cashless Toll Host System shall result in the generation and transmission of alarm message to the MOMS.
185	All messages shall be confirmed as received by the facility server (if provided) or Cashless Toll Host System before they are flagged for purging or overwritten. In the event of a communication failure the messages shall be retained on the zone controller until successful transmission is complete and verified.
186	The zone controller shall transmit all data to the facility server (if provided) or Cashless Toll Host System, including but not limited to the following:
	• all transaction messages generated in the lanes;
	• all alarm and status messages generated in the lanes;
	• all lane operational communication status messages and system health messages;
	• all events generated in the lanes that are displayed on the Dashboard or are required at the Cashless Toll Host System, and
	• all events required by the DVAS for real-time review or playback.

2.1.7.13 *Receiving Data*

187	The zone controller shall support the E-ZPass Group TSL and other interoperable agency lists and shall have the capability to support every Agency and its assigned transponder number range as described in the E-ZPass Group specifications.
188	The zone controller shall accept comprehensive (complete list once a day) and incremental (changes updated on a configurable interval, but not more frequently than every sixty (60) minutes) TSLs in accordance with the established Business Rules and shall activate the lists upon validation of the files.
189	The Contractor shall utilize data compression, encoding or other means to efficiently store and transmit the E-ZPass Group TSL and other interoperable agency lists, such that the new lists are available at the zone controllers within thirty (30) minutes of the Cashless Toll Host System receiving the new lists.
190	If tolls are determined by the In-lane Systems, then the toll rates, toll schedules and the effective date/time shall be downloaded to the zone controller and new toll rates initiated when the toll rate structure changes.
191	All configuration files and tables needed to support the lane operations shall be downloaded to the zone controllers from the Cashless Toll Host System upon confirmed change or at scheduled intervals and activated as required. Versions of the configurable files on each zone controller shall be maintained, tracked, and recorded.

192	All zone controller Software shall be downloaded to the zone controllers from the Cashless Toll Host System. Software versions on each zone controller shall be maintained, tracked, and recorded.
193	The Cashless Tolling System shall provide checks to detect issues with the data it receives from the facility server (if provided) or Cashless Toll Host System, including but not limited to:
	• incorrect versions of the data received;
	• corrupted data received, and
	• missing files when a file was expected.
194	An alarm shall be generated and reported to the MOMS for all exceptions/errors.

2.1.7.14 *Monitor All Lane Equipment for Device Status*

195	Each zone controller shall monitor the status and system health of its internal components and all associated in-lane Equipment. All Cashless Tolling Systems, including the AVI system, AVC system and the LPICPS shall be continuously polled for status. The health of digital devices that do not provide status shall be inferred from events (for example simple loops).
196	The System shall generate a recovery message and restore the operational status of a device that recovers after reporting a failure. Recovery messages shall be recorded against the original work ordered through the MOMS and shall be available to Authorized Users. Recovery messages shall not cause the associated work order to close, but shall serve as supporting evidence of an Equipment recovery.
197	If communications from the zone controller to the facility server (if provided) or Cashless Toll Host System are unavailable, an alarm message shall be generated and reported to the MOMS.
198	If communications to the image server(s) are unavailable, an alarm message shall be generated and reported to the MOMS.
199	If a lane is operating in any mode other than normal open mode an alert message shall be generated at configurable intervals and reported to the MOMS.

2.1.7.15 *Diagnostics and Equipment Malfunction*

200	The zone controller Software shall execute periodic diagnostic checks on internal processes, the in-lane Equipment and interfaces. Peripheral devices shall be interrogated for device status on a regular basis (configurable per device).
201	A device's failure to respond to a status inquiry after a configurable number of retries shall be regarded by the zone controller Software as an Equipment failure.
202	An alarm shall be generated and reported to the MOMS for all failures that are detected.

203	Diagnostic checks shall be performed in all modes of lane operation. Results shall be stored in the appropriate zone controller's event log and easily accessible to technicians. The System shall include "sanity checks" for fault conditions and shall report any detection of such conditions to the MOMS.
204	Degraded modes of operation shall be supported based on the Commission Business Rules developed during the Design process and Approved by the Commission. The Contractor shall ensure the Cashless Tolling System continues to operate with minimal loss of revenue or visible impact to the patron in the event that some components of the Cashless Tolling System fail and degraded mode operations occur.

2.1.7.16 *Stand-alone Mode of Operation*

205	The zone controller shall operate in a stand-alone mode for a minimum of thirty (30) days if communications to the Cashless Toll Host Systems are down. When operating in stand-alone mode, the last files downloaded from the Cashless Toll Host Systems shall be used for processing vehicles.
206	The zone controller shall have an available data port to permit onsite manual uploading of Software, TSL or other data required for continued operation until communications with the Cashless Toll Host Systems is re-established. Devices utilized to download the TSL and rate tables to the lanes shall have the capability of synchronizing current file versions such that a new TSL is updated on the device within an hour of receipt.
207	The System shall provide the capability for Authorized Users to download transactions from the zone controller and to transfer such transactions to the Cashless Toll Host Systems, and from the Cashless Toll Host Systems to the existing CSC/VPC system.
208	The System shall provide the capability for Authorized Users to download event/transaction data for manual and stand-alone playback of the DVAS.
209	Upon re-establishing communications with the Cashless Toll Host Systems all back-logged messages, including manually transferred messages, shall be flagged and transmitted to the Cashless Toll Host System without affecting the real time operations or degrading lane operations.
210	Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be generated and reported to the MOMS.

2.1.8 Digital Video Audit System (DVAS)

211	The Contractor shall provide a Digital Video Audit System (DVAS) that provides the Commission the capability to investigate lane performance issues and support the Commission in customer dispute resolution.
212	The Contractor shall develop, procure, furnish and install two or more IP addressable, color video cameras as part of the DVAS at each toll zone sufficient to meet the requirements of this section. The cameras installed shall be the same at all Toll Zones.

213	Authorized Users shall have the ability to individually setup, configure and control the cameras remotely through the application. Configurable settings shall be available on a per-camera basis to allow for tuning for site conditions.
214	As part of the Design phase, the Contractor and the Commission shall determine the optimum location for the installation of the DVAS Equipment to allow for the complete monitoring of each toll lane.
215	The location and number of cameras shall permit the capture of video that allows Authorized Users to identify the vehicle class and number of axles based on the ambient lighting conditions.
216	The Contractor is responsible for the installation of the DVAS Equipment, including mounting Hardware to the designated structure (either toll gantry or separate mounting pole) as well as power and signal cabling between the DVAS Equipment and the storage media as described in *Attachment 2: Cashless Tolling Installation Responsibility Matrix*.
217	The DVAS cameras shall have pan-tilt-zoom (PTZ) functionality that allows Authorized Users to remotely control each camera. When no PTZ commands are received within a configurable time the DVAS cameras shall revert to their default settings. Alarm messages shall be generated and reported to the MOMS when remote controls are activated or settings other than the defaults are detected.
218	The Contractor shall provide the lighting requirements to the civil contractor during the Design phase, as needed to ensure that the quality of the video of each toll lane, based on ambient lighting and/or weather conditions, is sufficient to meet the requirements.
219	The DVAS shall include all Equipment and Software necessary to provide the audit capability described herein, including but not limited to:
	• digital cameras and any associated lenses, lighting and sensors;
	• interfaces to the zone controllers to capture event data;
	• storage media, and
	• an application to view real-time video and events and playback the information.
220	The DVAS video stream and audit data shall be provided to the Cashless Tolling System independently of the transaction data stream; however, the DVAS shall be integrated into the System application and the video stream shall be linked to the transaction to meet the requirements specified in this section.
221	The Contractor shall provide Authorized Users the ability to access to the DVAS through the Cashless Tolling System application using any device authorized by the Commission with access to the Commission System network.
222	The DVAS video and event data shall be available from the Dashboard to Maintenance staff when investigating anomalies.
223	The DVAS solution for each tolling point shall provide the capability to monitor the overall configuration of the toll lanes with the ability to see each lane and the vehicle traveling that lane, and shall display detailed events for each lane as they occur in real-time.

224	At a minimum the DVAS shall display the highway, plaza ID, lane number, transaction number, transaction date and time, transponder ID, transponder class and the AVC class. The DVAS video and data shall be accessible in read-only mode; no changes or alterations to the video or data shall be allowed.
225	All detailed data obtained from various subsystems shall be available and shall be displayed to assist auditors and Maintenance staff with the investigation of discrepancies and problems. The DVAS shall perform and display video and data in real-time and shall have the ability to playback event data.
226	The DVAS shall also have the capacity to record and store up to a minimum of sixty (60) days (configurable) of video and data to an electronic media for each toll zone.
227	DVAS video and the corresponding event and transaction data shall be saved together such that when the data is moved to a different environment outside the production environment, the video can be replayed with the corresponding event and transaction data as long as the DVAS replay software is available.
228	The health of the DVAS shall be displayed and monitored. Any problems or failures detected shall be reported to the MOMS.
229	The DVAS shall be time synchronized to the same source as the zone controllers and shall interface to the zone controllers to obtain event data in accordance with the Approved ICD.
230	The DVAS screens shall allow the Authorized User to obtain and sort the video/data events through various query criteria or configurable report templates finalized during the Design phase, including but not limited to:
	• lane ID;
	• vehicle class;
	• transaction time;
	• payment type;
	• transaction time range;
	• alarm condition;
	• class mismatch condition;
	• unusual event conditions;
	• transponder ID, and
	• transponder status.
231	Identification displayed on the screen shall allow the reviewers to clearly differentiate the lane under review and its associated event data.

232	The DVAS shall provide the capability to save the displayed contents of a screen (images and data) and electronically distribute such information as needed.
233	Controls shall be provided to allow reviewers to step forward and backward through video data, by frame and to display the associated event data. All digitized video and corresponding event data shall be tightly synchronized and stored in accordance with these requirements.

2.1.9 Cashless Tolling Facility Server *(Optional)*

The provision of a facility server is optional but if the Contractor's solution includes a facility server, then the requirements in this section shall be met. The Contractor has the option to use the facility server as an image server as long as the Design complies with the requirements of the Scope of Work.

234	The Contractor shall provide one or more facility servers located at a tolling point if it is deemed necessary to meet the requirements specified in this Scope of Work. A facility server or set of servers can support multiple toll zones.
235	The Contractor shall furnish and install a complete Hardware configuration for each facility server to support the redundancy and performance requirements of this Contract, including but not limited to:
	• multiple processors;
	• dual, redundant, hot-swappable power supplies;
	• redundant storage devices; and
	• backup library.
236	The Hardware solution shall provide high-speed intra system network fabric between all storage, databases, servers, and backup systems.
237	The facility server shall interface to the zone controller and shall serve as a store and forward server for transactions and messages.
238	Each facility server shall communicate with the primary and secondary Cashless Toll Host Systems.
239	Each facility server shall be capable of storing transactions and images (if used as a local image server) from the in-lane subsystems for a period of minimum sixty (60) days, in the event of a communications failure.
240	The facility server shall be capable of operating in a stand-alone mode for a minimum of sixty (60) days if communications to the Cashless Toll Host Systems are down. When operating in stand-alone mode, the last files downloaded from the Cashless Toll Host Systems shall be used for processing vehicles.

241	The facility server shall have an available data port to permit onsite manual uploading of Software, TSL, or other pertinent data required for continued lane operation until communications with the Cashless Toll Host Systems are re-established. Devices utilized to download the TSL and rate tables (if applicable) to the facility server shall have the capability of synchronizing the current versions whereby a new TSL is updated on the device within an hour of receipt.
242	The System shall provide the capability for Authorized Users to download transactions from the facility server and transfer such transactions to the Cashless Toll Host Systems.
243	Upon re-establishing communications with the Cashless Toll Host Systems all back-logged messages, including manually transferred messages, shall be flagged and transmitted to the Cashless Toll Host Systems without affecting the real time operations or degrading the lane operations.
244	Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be transmitted to the MOMS.
245	Failure of any component of the facility server shall be detected and reported to the MOMS.

2.1.10 Roadway Pavement, Overhead Structures/Toll Gantries, and Toll Equipment Building Design Support

2.1.10.1 *General Design Requirements*

246	At the tolling points the Contractor shall install the toll collection equipment on the infrastructure provided by the civil contractor as identified further in *Attachment 2: Cashless Tolling Installation Responsibility Matrix*.
247	The Contractor shall work with the Commission, the civil designer and civil contractor on requirements for all civil construction work to be performed by others on the Project, including overhead platforms/toll gantries, toll equipment buildings, roadway/pavement, power requirements and conduit relative to the aspects that integrate with the Design and installation of the Cashless Tolling System.
248	The Contractor shall cooperate and provide support as needed to the civil Design and construction efforts. During civil design, Contractor support is anticipated to include responses to information requests for clarification on proposed designs.
249	During construction, Contractor shall provide review and approval of civil contractor shop drawings or similar within the context of the toll system functional and performance requirements.
250	During installation, the Contractor shall provide verification and approval of toll system related elements that the civil contractor is responsible for installing.

251	Upon approval of shop drawings or similar design elements by the Contractor within the context of System function and performance, Contractor shall assume responsibility for those elements to the extent that if the civil work is installed as designed and does not meet the performance requirements of this Scope of Work, the Contractor shall be responsible for the costs of redesign, civil rework and additional Equipment costs as further set forth in the Contract.
252	Contractor shall also coordinate and be available onsite as needed during the installation of the civil elements related to the Cashless Tolling System to ensure that the civil work is performed in accordance with the Contractor's requirements.

2.1.10.2 *Overhead Structures/Toll Gantries*

253	The Contractor's Equipment mounting and installation Design for any AVC overhead Equipment, AVI Equipment and LPICPS Equipment shall take into consideration its accessibility from the walkways on the overhead structure at the tolling points. The Design of the mounting structures and mounting arm shall allow technicians to replace Equipment and restore it to normal operations without additional tuning and without impacting performance.
254	The Contractor's cable routing Design shall include sufficient service loops to facilitate the retrieval of Equipment from the walkway providing sufficient retractable capability.
255	The Contractor shall provide in-lane Equipment Design, installation specifications, structural requirements and drawings for mounting the Equipment to the overhead structures/toll gantries at each toll zone as it relates to the Contractor's Equipment requirements to the civil contractor(s), including but not limited to Equipment mounting locations and installation instructions, mounting structure and mounting arms, conduit, junction box, and electrical requirements, wind load, Equipment load and power calculations, as well as Contractor requirements related to special electrical grounding and isolated circuit integrity by Equipment.
256	The Contractor shall also review and Approve all aspects of toll overhead structures/toll gantries design drawings submitted by the civil contractors that are related to the toll system Equipment, including but not limited to, the items identified in the requirements above in this section.
257	The Contractor shall be responsible for all necessary mounting Hardware required to install the toll Equipment on each overhead structure/toll gantry as specified in this Scope of Work and shall ensure installation is in compliance with Commission specifications.
258	The Contractor's Equipment installation Design shall have all overhead Equipment tethered to the platform structure at all times during installation and removal. The Equipment mounting devices shall also be tethered such that no loose bolts, nuts or pins shall fall into live traffic during Maintenance activities.
259	The Contractor shall be responsible for all Equipment installations, terminations, and connections of Equipment located on the overhead structures/toll gantries and for connecting such Equipment to the electronics in the equipment racks within the toll equipment building.

2.1.10.3 *Uninterruptible Power Supply (UPS)*

260	All Cashless Tolling System Hardware and equipment shall be on UPS. The UPS will be supplied by the civil contractor.
261	The civil contractor will furnish and install automatic transfer switch (ATS) and smart Power Distribution Units (PDUs) to manage the roadside power distribution.
262	The Contractor shall furnish and install an electronic interface to the UPS to monitor the UPS performance. The MOMS shall detect the status of the UPS and alert technicians when the System is on UPS.
263	Software drivers shall be developed, furnished, and installed to acquire, display, store and report all parameters provided as outputs from the UPS.
264	When the System is on the UPS and when it is off the UPS a notification shall be reported to the MOMS.

2.1.10.4 *Toll Equipment Building*

A toll equipment building with UPS, backup generator and Heating, Ventilation and Air Conditioning (HVAC) will be provided by the civil contractor at each tolling point indicated in *Attachment 1: Cashless Toll Zone Locations*. The emergency backup generators are contained in a separate room with outside access as shown in *Attachment 5: Concept Plan for Overhead Structure/Toll Gantries*.

265	The toll equipment building shall house the Cashless Tolling System equipment racks provided by the Contractor.
266	The Contractor shall provide the equipment rack space requirements to the civil contractor for each toll equipment building at each tolling point.
267	The Contractor shall install equipment racks within the toll equipment building in accordance with applicable Pennsylvania State building codes and Pennsylvania State DOT design standards, if and where applicable.
268	The Contractor shall adhere to all specifications of the latest PennDOT Standard Specifications at time of construction unless the Contractor receives written notification by the Commission which overrides the Standard Specifications. The PennDOT Standard Specifications can be found at: http://www.dot.state.pa.us/Internet/Bureaus/pdDesign.nsf/ConstructionSpecs408and7?OpenForm

269	At locations where tolling points are in close proximity to one another, a single toll equipment building with backup power generator will be used to support the toll Equipment requirements for multiple toll zones. At locations where a single toll equipment building is used for the Equipment at multiple toll zones, the Contractor shall procure, furnish, and install the interconnecting signal and power cables, and the necessary equipment racks and Equipment required for the multiple toll zones. The civil contractor is responsible for the provision of power and the raceway. The Contractor shall ensure that the lane performance is not degraded at locations where a single toll equipment building is utilized for multiple toll zones and that cable lengths are within manufacturer specifications.
270	The Contractor shall also review and Approve all aspects of the toll equipment building design drawings, power specifications, electrical and cabling design, circuit breaker and switches, and grounding design submitted by the civil designer and civil contractors that are related to the Cashless Tolling System Equipment.
271	The civil contractors will install the conduits between the toll equipment building and the demarcation point on the overhead structures/toll gantries as shown in *Attachment 6: Installation Demarcation Diagram*. The Contractor shall procure, furnish and install any conduit required from the demarcation point to the Equipment and between the various components on the overhead structures/toll gantries.
272	The Contractor shall procure, furnish, and install the cables necessary for terminating and connecting the Cashless Tolling System Equipment on the overhead structures/toll gantries to the electronics in the toll equipment building. Cable lengths shall include sufficient service loops to facilitate maintenance.
273	The Commission is responsible for the WAN communications and the Commission will furnish and install networking equipment at the toll equipment building and test the communications to the network at the PTC Data Centers. The Commission shall make available a number of ports, as specified during the Design phase, to the Contractor to allow access to the Commission network through the Commission administered firewall. The Contractor shall be responsible for all LAN communications related to the Cashless Tolling In-lane System and the Cashless Toll System outside the Commission firewall as shown in *Attachment 3b: PTC Communications Network Responsibilities*.
274	Each location will be allotted an IP v4 Class C range of addresses and all networking addressing will be coordinated with the Commission. LAN equipment shall be capable of supporting IPv6 addresses.

2.1.10.5 *Roadway Pavement*

275	During the Design phase the Contractor shall provide the in-pavement sensor requirements to the civil designers and civil contractors, if such sensors are to be used. Additionally, the Contractor shall review and approve the pavement Design, including roadway material to be utilized and construction methods to be used in the construction of the pavement.
276	The Contractor is responsible for the Design and installation of all elements of the Cashless Tolling System that embedded into the pavement.

277	The Contractor shall coordinate with the civil designer and civil contractors for the installation of the sensors in the lanes and identify the pull boxes and conduits. The location and Design of the pull boxes shall minimize the impact of Maintenance activities on the affected lane.

2.2 Cashless Toll Host System Functional Requirements

2.2.1 Cashless Toll Host System – General Requirements

278	The Contractor's central processing system architecture shall include a fully redundant highly available primary and secondary Cashless Toll Host System that meets the functional and performance requirements of the Scope of Work and is accessible to Authorized Users of the Commission System network.
279	The functions of the Central Image Servers (if provided) and the MOMS shall be part of the Cashless Toll Host System.
280	The cashless toll collection process shall be administered and controlled by the Cashless Toll Host System provided by the Contractor.
281	The Contractor shall work with the Commission to procure, furnish, and install all servers, storage and communications Hardware needed to support the Software that meets the Commission Cashless Tolling System requirements. While choosing the Cashless Toll Host System Hardware and third-party Software, the Contractor shall consider the staged implementation of the Cashless Tolling System in order to ensure the products are supported for the entire duration of the PTC Cashless Tolling Project.
282	The primary Cashless Toll Host System shall be installed in the PTC Data Center, a different physical location in the vicinity of the PTC Data Center, or a privately hosted Cloud location Approved by the Commission. The secondary solution can be hosted anywhere within the contiguous United States or an Approved, privately hosted, Cloud location. All infrastructure required to support the servers, including but not limited to UPS, air conditioning, security and backup generators shall be the responsibility of the Contractor. The primary and secondary Cashless Toll Host System configuration shall meet the Commission resiliency and Business Continuity plans.
283	The secondary Cashless Toll Host System shall be configured as a "hot stand-by" in an active-active state to allow continuous operations in the event of a failure of the primary Cashless Toll Host System.
284	The secondary Cashless Toll Host System environment shall mirror the primary system in all Hardware and Software configurations, be kept up to date and be capable of performing all functions of the primary Cashless Toll Host System as described in this Scope of Work.
285	All Hardware and third-party Software procured under this Scope of Work shall be confirmed to be the latest model or version at the time of purchase and shall be Approved by the Commission.
286	All servers and Hardware procured, furnished, and installed under this Contract shall have

	current anti-virus, firewall, spam protection and other security Software that protects from virus attacks and unauthorized access. All such third-party products shall meet the Commission IT security requirements described in *Attachment 7: PTC Cashless Tolling Security Standards*.
287	The System shall detect intrusion attempts and prevent all unauthorized access and intrusions at all levels and report such events to the MOMS. Any intrusion, compromise or breach must be reported to Commission IT Security with 12 hours of detection.
288	Virus protection and other Software shall automatically obtain updates according to a recommended (configurable) Maintenance schedule and report such events to the MOMS.
289	Redundancy shall be built into the System to support high availability requirements defined in table II-2.
290	The Cashless Toll Host System shall support the following general functions:
	• communicate with all the zone controllers in receiving transaction, alarm and other messages and transmitting TSLs, UIL and VEL (if exercised);
	• communicate with facility servers (if provided) in receiving transaction, alarm and other messages and transmitting TSLs, UIL and VEL (if exercised);
	• communicate with the applicable image server(s) for tracking and reconciliation image transmission and transfer status;
	• provide Dashboards to assist Maintenance and supervisory staff observation of transaction and event data in real-time, including reviewing DVAS image/video, images and data through these screens;
	• provide the capability to remotely operate the cashless tolling lanes through real time screens;
	• interface with the existing PTC Toll Host system to transmit transaction details and alarms;
	• provide the capability to import detailed and summarized data from the existing PTC Toll Host for historical reporting purposes;
	• interface with the existing CSC/VPC system to transmit transactions and toll rates and receive TSL and VEL (if exercised);
	• interface with SAP for the transmission of monthly toll transaction GL files and GL files received from the CSC;
	• perform Maintenance management functions of the System, including alarm notification and tracking, Equipment inventory, Maintenance history and other Maintenance related functions, incorporated into the MOMS;
	• provide an independent audit of successful receipt of all transactions from the zone controllers to the Cashless Toll Host System;
	• provide the capability to manage toll rate/toll schedule and transmit the toll rates/toll schedules to the zone controllers and the existing CSC/VPC system;
	• provide the capability to obtain employee information defined in the Design phase such as employee ID, role and access privileges from Active Directory and, if required, to transmit the (UIL to the zone controllers;

	• provide various management reports that assess the operational performance of the System, and
	• provide transaction reconciliation reports as determined by the Commission during Design.

2.2.2 Cashless Toll Host System Hardware and Third-party Products

291	The Work under this section shall include all labor, materials, and support Services to complete the Design; fabrication; assembly; integration; packaging; delivery; testing, and Acceptance of the primary Cashless Toll Host System Hardware and third-party Software in accordance with the requirements of this Scope of Work.
292	The Commission shall have ownership of all Hardware, third-party Software and firmware procured, developed, furnished, and installed as part of the Cashless Toll Host System.
293	The Contractor is responsible for obtaining all required licenses in the name of the Commission. All licenses and media shall be provided to the Commission for all Hardware, third-party Software and firmware. The Contractor shall retain authorized copies (backups) for all Software media to use for periodic system Maintenance, upgrades, or restore, as required.
294	The Contractor shall furnish and install a complete, fully redundant, Cashless Toll Host System Hardware configuration needed to support the redundancy and performance requirements of this Contract, including but not limited to:
	• multi-processors
	• dual, redundant, hot-swappable power supplies;
	• storage devices, and
	• storage devices, backup library.
295	The Cashless Toll Host Hardware solution shall provide high-speed intra system network fabric between all storage, databases, servers, and backup systems.
296	The System Design and Implementation shall ensure the Cashless Tolling System continues to operate without data loss even if any unit of the server configuration fails.
297	All components, supplies, Software and materials furnished under this Contract shall be new, commercial off-the-shelf (COTS) and field proven, and in revenue operations for two (2) years.
298	The Cashless Toll Host System server configuration, including all major Hardware elements, shall be of the latest design and incorporate standard commercial products currently in production.
299	All components procured, furnished, and installed by the Contractor should have the capability of sourcing from multiple Suppliers. The intent is to increase compatibility and reduce maintainability problems.

300	Proof of purchase in the form of dated invoice and shipping bills shall be retained and furnished to the Commission in accordance with the requirements of this Scope of Work and Contract for all hardware purchased by the Contractor.
301	The Cashless Toll Host System Hardware shall have a minimum manufacturer warranty for five (5) years.
302	The Cashless Toll Host System Hardware shall be supported for the duration of the Contract after the date of Operational and Acceptance Test Acceptance. During the life of the Contract the Contractor is responsible for ensuring the system is operational in accordance with the performance requirements.
303	The Contractor shall use proven server configurations that support future upgrades to processors, memory, storage, operating system, database, and other system components. All third-party Hardware and Software and Contractor Software shall be hardware neutral and shall perform without intervention on any hardware platform.
304	The System architecture shall have expansion capability to support a ten (10) year growth in traffic volumes in its installed Hardware which includes support of video tolling at the tolling points. For the purposes of calculation, an average E-ZPass penetration of seventy (70) percent and video transaction rate of thirty (30) percent, with ranges from 60-80% E-ZPass depending on locations throughout the system shall be assumed for the tolling point.
305	The operating system for the Cashless Toll Host System servers shall be a proven system used widely throughout the United States for intensive database operations and shall be compatible with the Relational Database Management System (RDBMS) and other tools employed.
306	The operating system for the Cashless Toll Host System servers shall be a multi-user, multi-tasking operating system.
307	The operating system shall support the redundant Cashless Toll Host System server architecture and all peripherals defined in these specifications.
308	The operating system shall also support the proposed communications topology, redundant Cashless Toll Host System configuration and Contractor's application Software.
309	The Contractor shall warranty the operating system for a minimum of five (5) years from the date of Operational and Acceptance Test Acceptance.
310	The operating system shall have a future upgrade path and shall be supported for the term of the Contract.
311	The Contractor shall provide and maintain supported versions of the operating system for the term of the Contract and all upgrades of the Cashless Tolling System operating system shall be the Contractor responsibility.
312	The Contractor shall keep all Software instances throughout all environments at the same configuration and patch level.

313	The Contractor shall provide a highly reliable and secure RDBMS for the storage of images, video, transaction data, violation data, audit data, and all other data, as applicable, for the retention period specified in the Scope of Work.
314	Contractor shall provide the latest version of the RDBMS that is field-proven to operate in a transaction intensive environment and shall meet the standards as defined in *Attachment 12: Database Standards for the Pennsylvania Turnpike Commission,* where applicable.
315	The RDBMS shall be compatible with the operating system and application Software, and shall support the redundant Cashless Toll Host System server architecture and shall meet the standards as defined in *Attachment 12: Database Standards for the Pennsylvania Turnpike Commission,* where applicable.
316	The RDBMS shall have an upgrade path and shall support upgrades to operating system, application, memory, processors, and other components.
317	The RDBMS shall have Maintenance and Upgrade Services for the term of the Contract.
318	The Contractor shall provide and maintain supported versions of the RDBMS for the term of the Contract and shall be responsible for upgrading the Cashless Tolling System RDBMS to the latest supported version.

2.2.2.1 *Central Image Server (Optional)*

The provision for a central image server is optional; however, Contractor's image processing solution shall meet the functional and performance requirements of the Scope of Work. The Design shall support latency in the transfer of images to the existing CSC/VPC system and prevent loss of images and video transactions if there are communications or server issues. If the Contractor's solution includes the provision for a central image server, then the central image server shall be located at a Commission Approved location.

319	The image processing solution shall support, but not be limited to the following general functions:
	• communicate with all the in-lane LPICPS for the transmission, tracking, reconciliation and processing of all vehicle images and video transactions;
	• communicate with facility servers (if provided) for the transmission, tracking, reconciliation and processing of all vehicle images and video transactions;
	• interface with Cashless Toll Host System for the processing and reconciliation of all vehicles images and video transactions;
	• interface with existing CSC/VPC system for the processing and reconciliation of all vehicles images and video transactions;
	• support the transfer of images and video transaction to the existing CSC/VPC system without loss of any image or video transaction, and
	• provide reconciliation reports as determined by the Commission during Design.

2.2.2.2 *Data Backup*

320	The Cashless Toll Host System shall include data backup software and hardware that allows remote incremental and full back up of data without manual intervention. Events from the backup software and status notifications from the backup process shall be reported to the MOMS.
321	During the installation of the Cashless Toll Host servers, the Contractor shall create an image of the completed server configurations, as well as maintain regular local and remote backups. If there is a catastrophic failure that results in the loss of data, means shall be provided to reconfigure the servers without disruption to Cashless Toll Host System operations.
322	The backup software shall be capable of displaying the backup data in a user-friendly and readable form as defined during the Design phase.
323	The Contractor shall provide a solution for data backup storage locally and off-site.

2.2.2.3 *Archive and Purge Control Mechanisms*

324	Provide the capability for fully automated and configurable data purging in accordance with the Commission's data retention requirements as defined in *Attachment 8A: PTC Records Management Manual, Attachment 8B: PTC Records Retention Schedule* and during the Design phase.
325	Purge routines shall be configurable for each impacted data elements, including but not limited to:
	• transaction data;
	• images;
	• video;
	• System logs;
	• MOMS data, and
	• interface files.
326	Servers shall retain transaction and summarized data, images, MOMS data and system logs, in accordance with the retention procedures, including but not limited to:
	• Cashless toll transactions shall be retained online for a minimum of twenty four (24) months and then archived and purged;
	• compressed images associated with class mismatch transactions shall be retained online for a minimum of ninety (90) days and then archived and purged;
	• video transactions and images (compressed video transaction image and region of interest{if implemented}) online for a minimum of six (6) months and then archived and purged;
	• DVAS video shall be retained online in accordance with the requirements of this Scope of Work;
	• summarized data shall be retained online for the term of the Contract;

	• system logs shall be retained online on the System for at least ninety (90) days and then archived and purged;
	• All security logs shall be retained online for at least one (1) year and then archived and purged;
	• MOMS detailed data shall be retained online for a minimum duration to ensure MTBF requirements are being met or at least twenty-four (24) months, whichever is greater;
	• MOMS summary data shall be retained online for the term of the Contract, and
	• all other data shall be retained on the System for ninety (90) days and then archived and purged.
327	Status and other events from the archival process shall be reported to the MOMS. No transactions shall be deleted unless confirmed to be successfully archived.
328	Storage shall be sized to accommodate all data to be retained online as specified in this Scope of Work and for the restoration of selected archived data (two months minimum).
329	Authorized Users shall be able to report on restored data.

2.2.2.4 *Maintenance Access and Application Access*

330	The Cashless Toll Host application shall run on existing workstations and laptops and Commission Authorized Users shall use their workstations/laptops to access the System. The Contractor is not required to procure, furnish, and install Commission workstations/laptops as part of the Cashless Toll Host System.

2.2.2.5 *Maintenance Access*

331	The Contractor shall procure, furnish, and install the required laptops, keyboards, video monitors, mouse(s), and KVM switches at the In-lane and Cashless Toll Host Systems locations to allow the Contractor technical staff to access all servers, controllers, computers, and devices in order to perform diagnostics and other Maintenance activities.
332	All maintenance hardware and software installed on the In-lane and Host Systems shall comply with Commission security requirements defined in *Attachment 7: PTC Cashless Tolling Security Standards.*

2.2.2.6 *Commission Access*

333	Any Commission authorized workstation/laptop connected to the Commission System network shall be able to access to the System application.

2.2.2.7 *Printers*

334	The Commission shall have the ability to print to any printer connected to the Commission System network. The Contractor is not required to procure, furnish, and install any printers for the Commission as part of the Cashless Toll Host System.

2.2.2.8 *Communications Equipment*

335	The LAN within a toll equipment building shall be connected by CAT6 (or higher) cabling and the LAN between Site toll equipment buildings shall be fiber. The WAN connectivity between the toll equipment buildings at each Cashless Toll Site and PTC Data Centers shall be provided by others. The Contractor shall be responsible for providing and obtaining the connectivity from any primary or secondary Cashless Toll Host locations to the PTC Data Center.
336	The Cashless System at the toll zones shall be connected and communicate to the primary and secondary Cashless Toll Host System and the existing CSC/VPC system.
337	The Contractor shall procure, furnish and install all required Tier 1 communication Equipment at the toll equipment building to support the Cashless System LAN. All LAN communications Equipment procured, furnished, and installed under this Contract shall be able to communicate with the Commission firewall and router.
338	The Commission is responsible for providing a WAN demarcation point (Ethernet hand off) at each Cashless Toll Site. The Contractor shall work with Commission IT staff to make the necessary connections and validate the connectivity between the Cashless Toll Site Systems and the Cashless Toll Host Systems. The LAN equipment at a Cashless Toll Site, its configuration, and the connection of the LAN equipment to the WAN demarcation point as shown in *Attachment 3b: PTC Communications Network Responsibilities* shall be the responsibility of the Contractor. Network addressing and connectivity will be coordinated with Commission IT staff.
339	The Commission is responsible for providing a demarcation point (Ethernet hand off) in the Commission's Data Center to the primary Cashless Toll Host System site. The Contractor shall work with Commission IT staff to make the necessary connections and validate the connectivity between the PTC Data Center and the Cashless Toll Host System site. The LAN equipment at the primary Cashless Toll Host System site, its configuration, and connection to the demarcation point as shown in *Attachment 3b: PTC Communications Network Responsibilities* shall be the responsibility of the Contractor. Network addressing and connectivity will be coordinated with Commission IT staff.
340	The Contractor may install the secondary Cashless Toll Host Systems at a Contractor location within the contiguous states of the United States as Approved by the Commission. The secondary Cashless Toll Host System can be housed in a Commission Approved privately hosted Cloud site. The Contractor is responsible for securing the connectivity from such secondary location to the PTC Data Center. If a cloud environment is desired, the Contractor must work with the Commission to determine appropriate architecture and security measures.
341	The Contractor shall work with the Commission in designing the interfaces between the Cashless Toll Host System, the existing CSC/VPC system, the PTC Toll Host system and SAP.
342	The Contractor shall work with PTC in designing the interfaces between the In-Lane Systems and the existing CSC/VPC system.
343	Network monitoring Software shall be procured, furnished, and installed on the MOMS server to monitor the System LAN status and communications, including the connections to the PTC Toll Host system, the In-lane Systems, the CSC/VPC system and SAP. All network alarms shall be

	reported to the MOMS.
344	If communications to any element of the Cashless Tolling System is degraded or down an alarm shall be generated and reported to the MOMS.

2.2.3 Cashless Toll Host System Software

The Cashless Toll Host System Software shall support the functionality detailed in this section and shall meet the Commission operational requirements set forth in this Scope of Work and Contract for the Term of the Contract.

2.2.3.1 *Data Communications and Interface Requirements*

345	All transactions, images and messages transferred between all subsystems shall be guaranteed and have the required data validation protocols to confirm the accuracy and validity of data transfer.
346	The Cashless Toll Host System shall support the interfaces specified in this Scope of Work including, but not limited to:
	• Interface to the zone controllers: If the Contractor's solution does not include a facility server, the Cashless Toll Host System shall receive and store all the messages from the zone controllers in real-time. It shall transmit all data required by the zone controllers to support its operation, including the UIL and TSL. All data sent to and received from each zone controller and the Cashless Toll Host System shall be acknowledged and confirmed.
	• the VEL shall be transmitted from the Cashless Toll Host System to the In-lane System to support on-site enforcement (if exercised).
	• Interface to the facility servers (if provided): If the Contractor's solution includes a facility server, the Cashless Toll Host System shall have the capability to transmit all data to and receive data from the facility servers as required in this Scope of Work to support lane operations. All data sent to and received from each facility server at the Cashless Toll Host System shall be acknowledged and confirmed.
	• Interface to the PTC Toll Host system: The Cashless Toll Host System shall have the capability to transmit detailed transactions and alarms to the PTC Toll Host system in batch mode (at configurable intervals/transactions) in accordance with the Approved ICD.
	• Interface to the existing CSC/VPC system: The Cashless Toll Host System shall have the capability to transmit AVI transactions to the existing CSC/VPC system in real time and in batch mode (at configurable intervals/transactions) in accordance with the Approved ICD.
	• Interface to the image server(s): The Cashless Toll Host System shall track and reconcile image transmission and transfer status.
	• Interface to SAP: The Cashless Toll Host System shall transmit monthly toll transaction, account, and other GL files received from the CSC/VPC system. Interface to SAP shall be further defined during the Design phase.
	• Interface to the MOMS: The Cashless Toll Host System shall interface with the MOMS to transmit alarms and Cashless Toll Host System operational status including recovery messages.

	• Interface between the MOMS and the current Commission diagnostic monitoring system, based on the Approved ICD.
347	The Cashless Toll Host System shall receive a comprehensive TSL from the existing CSC/VPC system once a day and incremental TSL/updates not more frequently than every sixty (60) minutes (configurable).
348	Toll rate tables shall be transmitted to the CSC/VPC when rate changes are initiated on the Cashless Toll Host System.

2.2.3.2 *Version Tracking Requirements*

349	The Cashless Toll Host System shall maintain records of the last 20 versions of the TSL, toll rate tables, VEL (if exercised), UIL, and lane configuration files that it received and/or created and that were successfully downloaded to the lanes. Receipt of files from the existing CSC/VPC system, their version, time of receipt and processing status shall also be tracked.
350	Reports and screens shall be made available to verify the versions and the file download status. Failure in the transmission of any data to a lane shall result in a failure message being logged and reported to the MOMS.
351	The system shall provide the capability to track the versions of lane executable programs installed at each toll zone location.

2.2.3.3 *Transaction Audit and Verification*

352	The Cashless Tolling System shall perform an independent automatic audit and verification process that confirms all vehicles traveling through the toll lane are detected and reported as transactions; all transaction transmissions between the zone controller and Cashless Toll Host System are successful and the System has the screens and reports to validate the audit trail.
353	If the validation process fails for any reason, failure messages shall be created and reported to the MOMS. If the audit process determines that vehicles or transactions are missing, the missing information shall be identified and reported to the MOMS.
354	If the audit process is successful then the audit for the location for the Revenue Day shall be deemed "complete" and System shall track this status of the audit on reports.
355	Once the Revenue Day is "complete" the data reported for that day should not change. Any condition for example toll waiving that result in changes to the data shall be identified and Authorized Users alerted.

2.2.3.4 *Data Summarization*

356	During the Design process and based on Commission Business Rules and reporting requirements, the system shall perform data summarization.

2.2.3.5 *Diagnostics*

357	The Cashless Toll Host System shall provide self-diagnosis functions to detect and report on the status and functioning of the Cashless Toll Host System Hardware devices; third party Software; communications; processes; tasks, and Software applications, as defined in the Commission Approved Design Document.
358	All Hardware and Software failures detected shall be reported to the MOMS.

2.2.3.6 *Data Security*

359	The Contractor shall ensure that any transactional data records, once entered into the System, cannot be deleted or changed.
360	Data records and files shall only be appended to and not edited or deleted as determined by the Commission during the Design phase.
361	All System access/entry, logins, and modifications (for example, flagging actions) shall be recorded and unauthorized access shall be prevented, logged and reported to Commission IT Security within 12 hours of detection.

2.2.3.7 *Transaction Pre-processing*

362	The Cashless Toll Host System shall ensure all transactions transmitted to the existing CSC/VPC system comply with the ICD specifications and Commission Business Rules.
363	The Cashless Toll Host System shall pre-process all transactions in accordance with the Approved Business Rules in order to filter incorrect transactions that may result from Equipment failures and lane logic issues.
364	Transactions that should not be processed further at the existing CSC/VPC system shall be identified and flagged prior to transmission and then transmitted to the existing CSC/VPC system as defined during the Design phase.
365	The Cashless Toll Host System shall identify exceptions, anomalies and other conditions determined during the Design phase in the event they have not been filtered at the zone controller, for example, same transponder read within configurable conditions.
366	In scenarios where multiple transponders with valid status are reported, all transponders can be transmitted to the existing CSC/VPC system and the existing CSC/VPC will post the transaction in accordance with Commission Business Rules.
367	In cases where there is a Transponder read data and a video transaction created for a vehicle (in case of Buffered Transponder Reads or lane logic issues) the Cashless Toll Host System shall identify the transaction that needs to be terminated based upon configurable parameters Approved during the Design phase. In case of Buffered Transponder Read transactions, the Transponder read time shall be used as the transaction time.
368	Based on the results of the pre-processing, an Exception List shall be generated and transmitted to the existing CSC/VPC system in accordance with the Approved ICD that identifies video transactions that needs to be terminated at the existing CSC/VPC system and further processing on these transactions stopped.
369	Alarm messages shall be created and reported to the MOMS in the event such exceptions

	identified in this section exceed a configurable threshold.

2.2.4 Cashless Toll Host System Application Software

370	The Contractor shall develop, furnish, and install a single, role-based, GUI application Software for the Cashless System that supports all user functions for the Cashless Toll Host System, including the MOMS and DVAS.
371	Based on the user's access privileges obtained from Active Directory the appropriate menus, screens, tabs, reports and other system functionality shall be made available.
372	Changes to the System data and parameters shall be through screens and only Authorized Users shall have access to these screens.
373	All access to the application and changes to the data shall be recorded and tracked, and the System shall provide an audit trail for all data modifications and parameter changes.
374	Authorized Users shall have access to the data modifications and parameter changes initiated by users.

2.2.4.1 *Graphical User Interface (GUI) Requirements*

The GUI design must include accepted industry design standards for ease of readability, understanding and appropriate use of menu-driven operations, user customization and intuitive operation.

375	The Contractor shall meet all Commission IT Security standards and practices in the design of the GUI for the Cashless Toll Host application.
376	The GUI design and development shall incorporate human factors and usability engineering and be optimized for speed, as well as provide the following controls, including but not limited to:
	• menus (such as pull down, popup, cascading, leveling, etc.);
	• windows (allowing for multiple windows within the application, such as to navigate back without having to re-enter information)
	• informational messages;
	• positive feedback;
	• exception handling and error dialogs, including logging the error;
	• control icons, links and action buttons;
	• data entry fields, combo boxes, check boxes;
	• display (read-only) fields, and
	• general and context-specific help menus.
377	Data entry screens shall have configurable mandatory fields that require data entry prior to continuing through the process.

378	Provide field-level validation (server-side enforced) and format verification upon exiting data fields applicable to pre-defined formats or standards, including but not limited to:
	• alpha-numeric;
	• date;
	• time;
	• special characters;
	• length;
	• lane and plaza ID, and
	• Transponder numbers.
379	Provide other formatting masks (server-side enforced) as configured by the System administrator (visible to certain users but masked for other users), which can be applied to any other field in the GUI.
380	Provide field-level "tooltips" or other interactive help, Configurable by the System administrator, that provide specific guidance on any field presented, including but not limited to:
	• alpha-numeric fields;
	• date fields;
	• time fields;
	• special characters;
	• username and password;
	• length restrictions;
	• lane and plaza ID, and
	• Transponder fields.
381	Online help shall be provided for each screen, each editable field and each selectable option within each screen.

2.2.4.2 *Screens and Report Access*

382	Provide the capability to assign users access privileges to System reports based on user level/role, as determined by the Commission during the Design phase, to the Cashless Tolling System application.
383	Provide the capability to assign read-only rights to roles so that users belonging to that role will not be allowed to enter any data.
384	Provide the capability for Authorized Users to maintain roles and permission access to the System.

2.2.4.3 *Cashless Tolling System Screens and Reports*

385	All data entered or generated in the System shall be retrievable (on-demand and scheduled)

	through reports and screens.
386	Reports menu shall be organized by category of reports and shall be intuitive to users and easily accessible based on user access.
387	Data shall be summarized to improve report generation performance and to track changes in data for as-of-date reporting.
388	Reports and screens available through the System shall have various selection, group by, and sort criteria, and shall be easily configurable.
389	The location selection criteria shall include but not be limited to District, Highway, tolling point, lane, and direction of travel to be defined during the Design phase.
390	Provide the capability to generate the same report by hour, day, date range, weekly, monthly, quarterly, yearly (fiscal and calendar), year-to-date and comparative.
391	Provide the capability to present report data as an accumulation or individually for the selected criteria. This capability shall be configurable and applicable to District, Highway, Cashless Toll Plaza, and different transaction types whereby the user can choose the data to be presented as an accumulation of, for example grouped by all Cashless Toll Plazas and/or payment types or as individual Cashless Toll Plazas and/or payment types.
392	Reports developed shall allow the Commission to audit and reconcile data transmitted between various subsystems within the Cashless Tolling System, and with the PTC Toll Host system and existing CSC/VPC system in accordance with this Scope of Work.
393	Provide ad-hoc reporting tool capabilities to Authorized Users to allow the creation and execution of custom reports, including but not limited to:
	• drag-and-drop field functionality;
	• drill down functionality;
	• filtering;
	• parameter prompting;
	• formula support;
	• grouping;
	• sorting, and
	• stored procedure and function support.
394	The ad-hoc reporting tool shall be COTS software and be the latest version at the time of Acceptance testing and field-proven to operate in a transaction intensive environment.
395	The ad-hoc software shall be compatible with operating system standards and shall be patched and upgradeable to new versions of the Software and operating system.
396	Ad-hoc report templates created by Authorized Users shall be saved and made available to all Authorized Users.
397	All reports shall show the status of the validation/audit process, as defined by the Commission and other relevant statuses that indicate items, including but not limited to whether:
	• all data has been obtained from the lanes;
	• the data has been re-summarized;

	• the transactions have been transmitted to the existing CSC/VPC system, and
	• the report is complete.
398	The time of the last transaction processed shall be included in all applicable reports to assist with the reconciliation and audit.
399	Once the audit process is completed and Revenue Day is closed, the data on reports for the day shall not change unless data is re-summarized.
400	All reports shall include individual totals, sub-totals, and grand-totals as appropriate.
401	Reports shall have the capability to select the date type, including but not limited to:
	• revenue date;
	• transmission date;
	• as-of date;
	• process date;
	• transaction date, or
	• a combination thereof, as designated by the Commission.
402	Reports shall use conditional formatting to identify exceptions and data that are outside the normal trend.
403	Provide reporting output in various formats (both compressed and uncompressed), including but not limited to:
	• Portable Document Format (PDF);
	• plain text format (TXT);
	• rich text format (RTF);
	• Microsoft Excel (2010 version and later);
	• delimiter-separated values;
	• hypertext markup language (HTML), and
	• extensible markup language (XML).
404	A report generation feature shall be available for configuration and shall permit Authorized Users to request selected reports for auto delivery by email or to a designated server according to a routine or custom interval, such as the start of the Business Day or at other appropriate times as designated or requested by the user as determined in the Design phase.
405	Data from summary reports scheduled to run daily shall be automatically exported daily to a specified file format and made available on the Commission designated server as defined during the Design phase.
406	Capability shall be provided to drill down all high-level reports to the next level of detail and to event level details as required as defined in the Design phase.
407	Authorized Users shall have the capability to display and review the LPICPS images and DVAS video and event details associated with the selected transaction from the drilled down details.
408	Authorized Users shall have the capability to view the contents of files that are received by the Cashless Toll Host System and transmitted by the Cashless Toll Host System in a readable format.

	If files are compressed or encrypted, the necessary Software tools shall be provided to view their contents. If the user selects a specific file, the contents of the file shall be displayed and the user shall have the ability to save the contents at minimum as a .csv file, xml, txt and in a useable Excel format as Approved.
409	Capability shall be provided to present data in graph forms and chart types and the user shall be able to select presentation form from a variety of graphic styles.
410	Data shall be organized and summarized in a manner to allow for report generation within no more than two (2) seconds for daily reports, and no more than twenty (20) seconds for monthly and annual reports, of a report generation request.
411	The Contractor shall support the creation of additional reports and/or the modification of implemented reports, as needed after the initial deployment and Implementation of the System. . It is anticipated that no more than one hundred (100) additional reports will be required for the term of the Contract.

2.2.4.4 *Cashless Toll Host Reports*

Existing Host reports are included in *Attachment 9: Existing PTC Host Reports* for reference.

412	The Cashless Tolling System shall provide reports to audit and reconcile the System, provide traffic and revenue trends, validate System performance and perform historical reporting on detailed and summarized data imported from the existing PTC Toll Host.
413	Report Designs and templates shall be presented by the Contractor and reviewed by the Commission during the Design phase and Approved.

Transaction and Revenue Reports

414	Transaction Summary Reports: These reports show daily, weekly, monthly, quarterly, yearly, and comparative transaction and revenue, by vehicle class and payment type. Transaction and revenue reports shall be summarized and detailed. The summary data shall drill down to the Transaction Detail Report.
415	Transaction Detail Report: The transaction details shall be provided in this report including lane status, equipment status, transaction status and various lane flags. Users shall be able to access the bit descriptions in all cases where information is coded. The report shall be used to investigate discrepancies and issues.
416	Accounting Revenue and Associate Traffic Report: This report shows accounting revenue and traffic counts by Revenue Dates for the vehicle class categories.
417	Bedford/Breezewood Special Report: The report shows monthly traffic and revenue counts for current year and previous year usage for travel between Bedford and Breezewood. Sub-totals and grand totals provide a breakdown by transaction type, for example E-ZPass, Video and Non-Revenue and are grouped by vehicle class.
418	Class Report: This report shows information related to traffic and revenue by vehicle class by transaction types, for example E-ZPass, Video and Non-Revenue This report is used by management and operations to report on traffic and revenue by vehicle class.
419	Executive Summary Traffic and Revenue Report: This report shows daily traffic counts and

	revenue amounts by revenue category, for example E-ZPass and Video by vehicle class category, grouped by shift, selected day totals, previous day totals, percentage of increase/decrease and month to selected day totals. This report is used to show the increase and/or decrease in traffic counts and revenue compared to the previous days' totals using the breakdown by revenue types. Data in this report shall also be represented graphically to include selected day traffic and revenue statistics; daily revenue and traffic comparisons by vehicle class and revenue type including selected day; previous day; month to selected day average and prior week day. Backup of the summary data by District and tolling point shall be included.
420	Finance Traffic and Revenue Details Report: This report shows traffic and revenue counts by tolling point and is grouped by vehicle class categories for the specified highway(s) selected. This report provides operations and management with traffic and revenue totals for each tolling point by vehicle class categories for a specified date range.
421	Traffic and Revenue Report: This report shows transaction by transaction type, for example E-ZPass, Video and Non-Revenue for tolling points in each District for the selected highway(s). The data is grouped by vehicle class categories and tolling point. A summary is provided at the end of the report by vehicle class category and transaction type.
422	Traffic and Revenue Comparison Report: This report shall provide a comparison of current year monthly traffic and revenue data with the previous year with percentage increase/decrease and includes selected highway(s) by district and tolling point. Similar to the traffic and revenue report above, the report includes a breakdown by vehicle class category. The report is further divided into sub-groups by revenue category, for example E-ZPass and Video.

Traffic Reports

423	Average Lane Throughput Report: This report shall display hourly traffic volumes for each lane grouped for each tolling point within the selected District. Hourly traffic volumes shall be totaled by lane for the day for each tolling point to calculate the average lane throughput at each tolling point.
424	Counts and Percentages Report: This report shall display vehicle counts and percentages of each count grouped by vehicle class category and vehicle class for each revenue category for example E-ZPass and Video for each tolling point. This is a daily report and is grouped by tolling point for the selected highway(s) and district. This report shall drill down to the Counts and Percentages by Direction Report.
425	Counts and Percentages by Direction Report: This report shall display vehicle counts and percentages of each count grouped by vehicle class category and vehicle class for each revenue category for example E-ZPass and Video for each tolling point. This is a daily report and is grouped by tolling point and direction for the selected highway(s) and district.
426	Lane Traffic Counts and Statistics Reports: This report shall provide AM and PM traffic counts and statistics by hour for each Highway and tolling point by revenue category for example E-ZPass and Video. The report shall also include AM and PM peak hour statistics and provide a grand total by revenue category for all peak hour. The total percentage of E-ZPass transactions with the AM/PM breakdown and identification on the E-ZPass high hour and lane shall be included.

427	Finance Traffic Details Report: This report shall display traffic counts grouped by tolling point and vehicle class category and include grand totals for each vehicle class category.
428	Plaza By Lane Report: This report shows traffic counts by lane for each tolling point by vehicle class categories and vehicle classes. This report includes the summary by tolling point for the selected District. This report is used by operations staff in analyzing traffic volumes by lane and vehicle class.
429	Market Penetration Report: This report shows traffic counts by revenue category, for example E-ZPass and Video for AM/PM peak hours and includes the E-ZPass penetration percentage.
430	Speed Reports: This report shows the traffic count information per lane by speed segments. This report is used by operations staff to monitor traffic flows and speeds.
431	Traffic Counts Report: This report shows traffic count information grouped by revenue category for example E-ZPass and Video with breakdown by transaction types and sub-totaled by tolling point and vehicle class categories. The combined counts include a breakdown by revenue and nonrevenue transactions. This report shall drill down to the Traffic Counts by Direction Report.
432	Traffic Counts by Direction Report: This report shows traffic count information grouped by c revenue category for example E-ZPass and Video with breakdown by transaction types and sub-totaled by tolling point, direction and vehicle class categories. The combined counts include a breakdown by revenue and nonrevenue transactions.
433	Vehicle Count Through Closed Lanes Report: This report shall display tolling point, lane and detailed transaction information for vehicles that travel through a closed lane based on the date range, tolling point and lane.
434	Vehicles and Mileage Report: This report shows traffic counts for all vehicle classes in addition to vehicle class category for each revenue category between tolling points and total distance traveled for the selected criteria. The report includes a summary page with traffic between tolling points and total miles traveled. Each summary shall be grouped by vehicle class category and revenue category, for example E-ZPass and Video.

System Audit Reports

435	Transaction Audit Report: This report shows the status of the transaction transmission from the zone controllers to the cashless tolling host, the audit status, the failed transactions, duplicate transactions, all exceptions, and missing transaction sequence numbers at each of the tolling points. The communication status between the zone controllers to all of the subsystems shall be displayed. The report shall also include the date the transactions were received at the Cashless Toll Host and the days lagging. It also shows the transmission status of the transactions to the PTC Toll Host system.
436	System Audit Trail Reports: Weekly and monthly reports shall be made available that show the modifications made by the users to system parameters and ability shall be provided to obtain the details of the modifications.
437	System Exceptions Report: The System Exceptions report shall display transactions that are considered exceptions, including but not limited to duplicate transactions; dual transponders; Cashless Toll Host filtered transactions and non-interoperable transponder reads. Exception handling errors and the disposition of these exceptions shall also be displayed along with the

	transaction.
438	Image Reconciliation Report: The Image Reconciliation report shall provide the ability to match transactions by type to images and to help identify missing images. These reports shall not only reconcile the actual images saved to what was expected but also verify that the images were successfully transmitted from the lanes to the image server(s) and on to the CSC/VPC system. Data on this report shall match other transactions summary reports. This report shall drill down to the Image Reconciliation Detail Report.
439	Image Reconciliation Detail Report: This operational report list the information on the video transaction for a user defined transaction date/time range. Capability shall be provided to show only records where an image is expected and if the image is expected if the image has arrived yet.
440	Transactions Reconciliation Reports: Yearly, quarterly, monthly, weekly, and daily reports that show AVI and video transaction transmission reconciliation for all of the tolling points. These reports shall validate that all of the AVI and video transactions received from the lanes were posted to the Cashless Toll Host System and transmitted to the PTC Toll Host system. Reports shall be available by transaction day and transmit day, and transmit day reports shall show the files transmitted and acknowledged by the receiving system.
441	Fare Schedule Report: This report shall provide the fare schedule for the selection criteria. The fare amount for each vehicle class will be displayed by tolling point for the effective date selected. The report shall be used by operations and management staff to verify future, current and past versions of released and unreleased fare schedules based on the effective date selected. Historical fare information shall be used in determining future changes in fares. It may also be used to reconcile past transactions amounts.
442	Hardware Status Report: This report shows the hardware status codes and descriptions based on the selected date range, Highway, District, Plaza, Lane and type of hardware failure. This report allows maintenance staff to audit the state of all hardware components in the lanes.
443	Transaction Number Gap Report: This report shall provide information on gaps in transaction numbers based on tolling point and lane for the specified date range.
444	Unusual Occurrence Report: This report shall be used to provide operations and maintenance staff with information regarding unusual occurrences with lane data to identify potential hardware issues, software issues or other system anomalies. The report shall include the Highway(s), and tolling point and may be filtered by unusual occurrence (UO) code. This report includes lane number, transactions date and time, lane status transaction number and a description of the UO.
445	Lane Operations Report: This operational report lists and summarizes vehicle transactions and equipment messages that are generated in the lanes. This report is an audit tool that presents all lane activity for a specified location and desired transaction date and time period. Numerous selection and filter criteria shall be provided to help identify problems. Detailed information regarding the transaction and event shall be included.
446	Transponder Audit Report: This report verifies that transponders are properly read at each cashless tolling location

Performance Reports

447	Transponder Status List Transmission Report: The TSL Transmission report shows the status of the TSL transmissions to the Cashless Toll Host System and to all of the zone controllers. Summary information related to the number of transponders, time acknowledged by the zone controller and other data shall be provided to verify results and performance requirements. Time of receipt from the existing CSC/VPC system, time of transmission to the zone controllers and the status of the transmission shall be displayed. Lanes not compliant to the requirements shall be identified.
448	Image Transmission Summary Report: This operational report counts the number of images created in the lanes for a user defined image created date range and other criteria. Data displayed include the number of triggered, non-triggered and total images from the lanes and the date the images were received at the image server(s). For each received date, the total images, number of lag days, the percentage of transactions received each day and a cumulative percentage shall be included.
449	Image Transmission Detail Report: This operational report lists information on images from the lanes for a user defined lane created date. Capability shall be included to show image records where it took longer than a user defined number of hours for the image to arrive at the image server(s).
450	File Transfer Performance: This operational report lists files that have been created and sent from the Cashless Toll Host System by component for either the created date range or sent date range selected by the user. Information displayed include, file information, created date and time, sent date and time and process time. This report verifies System compliance to performance requirements. File/data transmissions to the lanes shall include confirmation of successful delivery at each lane.
451	OCR/ALPR Performance Report (if the option to implement OCR/ALPR is exercised): The OCR/ALPR Performance Report shall display OCR/ALPR performance statistics by jurisdiction. Problematic cashless tolling lanes, Plazas and jurisdictions shall be identified. The report shall include a breakdown of the OCR/ALPR performance by confidence levels.

2.2.4.5 *Cashless Tolling Dashboards*

452	The Contractor shall provide Dashboards developed during the Design phase to monitor the Cashless Tolling System. The Dashboards shall include but not be limited to real-time monitoring of tolling point traffic, maintenance data and system performance monitoring.
453	The Contractor shall provide the capability for Authorized Users to monitor the real-time activity at all tolling points in a pictorial and Dashboard view. There shall be an overview representation of all the highways from which individual highways can be accessed.
454	The Contractor shall provide Authorized Users the capability to view real time DVAS video and also playback recorded video via the Dashboard. The event data pertaining to the vehicle in the video shall be displayed on the video.
455	Authorized Users shall have access to the detailed data directly from the pictorial and Dashboard view.
456	Authorized Users shall have the capability to drill down to each lane to review and monitor detailed events as they occur for each transaction.

457	Authorized Users shall be able to easily maneuver through screens and view data, and different colors and pictures shall be used to bring critical events to the user's attention.
458	Summary data by payment type for all Commission toll facilities and by tolling point shall be displayed and users shall have the ability to drill down to the details. If a specific tolling point is selected, transaction and event level data by lane shall be made available and users shall have the ability to view the DVAS real-time video and video transaction images through this screen.
459	All priority 1 alarms shall be displayed in color and shall be audible to direct attention to the failure.
460	Authorized Users shall be able to easily identify problems (traffic or Equipment) on the cashless tolling lanes and initiate MOMS work order from this interface.
461	In addition, the Dashboard shall provide detailed real-time information about the AVI system performance, the AVC system performance, and the LPICPS performance to assist in diagnosing and investigating problems. Data pertinent to traffic monitoring and Maintenance shall be displayed in real-time.

2.2.4.6 *Remote Operations*

462	The System shall provide the ability to allow Authorized Users to remotely operate the cashless tolling lanes to support the Commission operations, including but not limited to:
	• remote update of security patches and Software updates;
	• download TSL, VEL (if exercised), and any files required to selected zone controllers when there are issues, and
	• restart a specific zone controller node.

2.2.4.7 *User Setup and Maintenance Screen*

User setup and maintenance is a critical task since the employee access levels/roles created through the System determines what privileges and access rights each employee is granted.

463	Access to the zone controllers and Cashless Toll Host System including the MOMS and DVAS functions shall be controlled through the user setup interface.
464	The user list shall be obtained from the Commission Active Directory maintained by Commission IT or from an Approved source at regular intervals as defined during the Design phase.
465	An operations Alert shall be generated each time a new user is detected so that their user roles can added and access to the System defined.
466	Authorized Users shall have the capability to also create new users through the System.
467	Through a user setup and maintenance screen, the users shall be designated various access levels/roles based on their responsibilities (job description).
468	In the Design phase access levels/roles shall be created and the System shall allow the input and editing of generic job access levels/roles.
469	The access rights of each role and the ability to add roles and users shall be defined by the Commission during the Design phase.

470	The user setup and maintenance screen shall be also used to activate and inactivate employees and also terminate them from the System.
471	The same screen shall also be used to assign and update User ID and PIN/password for access to applications.
472	Passwords assigned to employees and the password management process shall meet current Commission policy standards.
473	As soon as the information is saved, the UIL shall be transmitted in near real-time to the various Systems for immediate user access.

2.2.4.8 *Toll Rates and Schedule*

474	The System shall provide Authorized Users the capability to create and manage toll rates and schedules.
475	At a minimum, capability shall be provided to establish toll rates based on Highway, tolling point, vehicle class, and payment type and shall support time of day and Holiday toll rates as defined during the Design phase.
476	Authorized Users shall have the capability to pre-establish the effective date/time the toll rates will be enabled. The System shall permit the Commission to schedule toll rates and changes in toll schedules in advance of the new rates becoming effective.
477	Authorized Users shall have the capability to establish a default toll rate to be used in the event of data unavailability or other conditions as determined by the Commission that would warrant the use of the default toll rate.
478	The System shall record and track the toll rate ID and toll schedule ID and their transmission status for audit purposes.

2.2.4.9 *Configurable Parameters*

All parameters changes shall be Approved by the Commission in accordance with the Commission Engineering Change Order (ECO) Process.

479	The System shall provide the capability for Authorized Users to modify the configurable System parameters.
480	Any change shall result in the creation of a new configurable parameter set and each change shall be identified by a unique identifier.
481	Changes to configurable parameters can be scheduled to take effect immediately or at a scheduled time as determined by the user.
482	The System shall record and track all changes to configurable parameters for audit purposes.
483	When a new parameter takes effect, a notification shall be generated and reported to the MOMS.

2.2.4.10 *Zone Controller Executable Download*

All Software changes shall be Approved by the Commission in accordance with the Commission Engineering Change Order Process.

484	The System shall have the capability to download zone controller executable files and all other files required by the lane for its operations. All Software updates shall be coordinated with the Commission.
485	Successful download of the files shall be verified and alarm messages generated if any file was not received by any zone controllers.
486	Where possible, once the Commission has Approved a Software release, all System application updates shall be automated requiring no action by Maintenance personnel.

2.2.5 General Requirements for Interfaces

The Contractor is responsible for working with the Commission and the existing Contractors in Designing, developing, documenting, testing and implementing all required interfaces. Electronic interfaces are required to provide connectivity between the existing PTC Systems (PTC Toll Host and CSC/VPC), the Cashless Toll Host System and In-lane Systems. The Contractor shall be responsible for developing the ICDs, and where changes to existing ICDs are required, these documents shall be modified by the Contractor as part of this Scope of Work based on the Contractor solution during the Design phase. The ICDs shall include requirements for data format and transmission, criteria for acknowledgement and validation of transmitted data and procedures for recording and reconciliation, as appropriate for each interface. It is expected that the latest version of the ICDs will be implemented at go-live and that the Contractor shall continue to update the ICDs as appropriate for the life of the Contract.

487	Provide electronic automated interfaces to the existing systems in accordance with these requirements.
488	Provide for guaranteed transmission of data for all interfaces.
489	Provide for one hundred (100) percent reconciliation of the transmitted data and files.
490	Provide the capability for Authorized Users to access and view the contents of files, including compressed or encrypted files, which are received and transmitted by the Cashless Toll Host System in a readable format. Authorized Users shall have the capability to save the contents of such files.
491	Provide the capability for real-time alerting to the MOMS of interface and data transmission failures, including but not limited to:
	• MOMS Dashboard for managing and monitoring interfaces;
	• workflow user interface for managing and monitoring steps within each interface;
	• status and history of executions;

	• comprehensive scheduling of file transmissions;
	• comprehensive reporting for inbound and outbound transmissions;
	• tight integration with the MOMS and notification of failed transmissions;
	• notification of file transmission and receipt status, and
	• capability to manually execute a failed transmission.
492	The Contractor shall utilize secure protocols Approved by the Commission for the transfer of data and/or files via interfaces defined during the Design phase.
493	Provide the capability to transmit and receive multiple files during each scheduled batch.
494	Provide the capability to transmit and receive multiple files in a day.
495	Utilize file naming conventions that prevent the overwrite of data and/or files. For example, include the date and time of transmission and provide for unique identifiers.
496	Utilize file handling and processing methods that provide a complete log of the data and/or file transfer process. For example, files that are successfully processed are moved to a processed folder.
497	Validate records and identify errors in the received data and/or files, including but not limited to:
	• mandatory fields;
	• data formats;
	• data validity (such as tolling points and lane numbers);
	• duplicate records;
	• unexpected response;
	• checksum/record count verification and
	• incorrect status.
498	Provide the capability to correct and re-transmit data and/or files.
499	Provide the capability to process re-transmitted data and/or files automatically or manually by Authorized Users as determined during the Design phase.
500	Provide the capability to transmit the error details to the transmitting entity, as well as record it in the MOMS.
501	Provide the ability to identify missing records/transactions/images and request the transmission of such missing records/transactions/images.

502	Reconcile the transmitted records to the records received and accepted by the receiving entity.
503	Provide the means to identify interface issues by validating the file transmission process, including but not limited to:
	• creation and transmission of data and/or a file at the scheduled time, even if there are no records to transmit;
	• determination if the data and/or a file was transmitted or received at the scheduled time;
	• creation of Alerts to the MOMS if data and/or a file was not created or received at the scheduled time;
	• creation of Alerts to the MOMS if received data and/or a file was not acknowledged;
	• creation of Alerts to the MOMS if records in the received data and/or file had errors when processed;
	• provide details in real-time to the MOMS of each failed record and
	• creation of Alerts to the MOMS when a response has not been received for individual records within the expected duration.
504	Provide data and/or file transmission and reconciliation reports as described in these requirements.
505	Provide a Dashboard that tracks the progress of data and/or file transmissions through each stage and their acknowledgements by the receiving entity, including but not limited to:
	• transactions eligible for transmission;
	• file and/or data created with file name;
	• file and/or data transmitted;
	• file and/or data received;
	• file and/or data accepted;
	• file and /or data rejected;
	• file and/or data re-transmitted;
	• number of records in the file and/or data set and
	• number of failed records.
506	Provide the capability for Authorized Users to configure the relevant parameters related to file and/or data transmission for each interface.

507	Monitor the disk capacity where files and/or data are deposited and send an Alert to the MOMS and interfaces entities (if applicable) if folders are near capacity (configurable) or full.
508	Provide the capability to automatically archive successfully processed data and/or files after a configurable number of days.
509	Provide the data to reconcile file transmissions.
510	Conform to any existing ICDs, including any updates required at the time of Design and develop all new ICDs that have been identified as "to be developed". It is the Contractor's responsibility to ensure all ICDs (including existing) are accurate, updated and meet the requirements of the Scope of Work before developing the interfaces.

2.2.5.1 *Cashless Toll Host System to SAP Interface (Optional)*

511	The Contractor shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system.
512	The Contractor shall provide the capability to validate that the received files were successfully transmitted to SAP.

2.2.5.2 *Cashless Toll Host System Interface to the Existing PTC CSC/VPC System*

513	The Contractor shall design and develop an interface from the Cashless Toll Host System to the existing CSC/VPC system to transmit receive and acknowledge one hundred (100) percent of all transactional and financial data in accordance with the Approved ICD developed during the Design phase.
514	The interface shall be capable of receiving the following financial data from the existing CSC/VPC system for transfer including but not limited to:
	• monthly GL data feeds sent from the CSC/VPC;
	• monthly CSC Surety Files, and
	• monthly CSC tag and account files.
515	The interface shall be capable of transmitting AVI transactions, Exception List, Non-Revenue License Plate List and toll rates to the existing CSC/VPC system.
516	The interface shall be capable of receiving TSL and VEL (if option is exercised) files from the existing CSC/VPC system.
517	The Contractor shall provide the capability to positively acknowledge (ACK) message receipt, negatively acknowledge or reject a message (NACK) and reconcile data transmissions to/from the Cashless Toll Host System.

2.2.5.3 *Cashless Toll Host System Interface to the Existing PTC Toll Host System*

518	The Contractor shall design and develop an interface from the Cashless Toll Host System to the PTC Toll Host system to transmit one hundred (100) percent of all transaction in accordance with the ICD to be developed for this interface during Design.
519	The interface shall be capable of transmitting the following data including but not limited to:
	• transaction records and
	• alarms.
520	The Contractor shall provide the capability to reconcile the successful transmission of the summary data to the PTC Toll Host system.

2.2.5.4 *Cashless Toll Host System to Facility Server Interface*

The provision of a facility server is optional but if the Contractor's solution includes a facility server, then the requirements in this section shall be met.

521	The Contractor shall design and develop an interface from the Cashless Toll Host System to the facility Servers (if applicable) to transmit, receive and acknowledge one hundred (100) percent of all data in accordance with the Approved ICD.
522	The interface shall be capable of sending TSL, VEL (if option is exercised), configuration files, Software updates and toll rates (if applicable) to the facility servers.
523	The interface shall be capable of receiving all transactions, alarms and event messages from the facility servers.
524	The Contractor shall provide the capability to reconcile the successful transmission and receipt of all data at the Cashless Toll Host System.

2.2.5.5 *Cashless Toll Host System to Zone Controller Interface*

525	The Contractor shall design and develop an interface from the Cashless Toll Host System to the zone controllers to transmit and acknowledge one hundred (100) percent of all data in accordance with the Approved ICD.
526	The interface shall be capable of sending TSL, VEL (if option is exercised), configurations files, Software updates and toll rates (if applicable) to the zone controller.
527	The interface shall be capable of receiving all transactions, alarms and event messages from the zone controller.
528	The Contractor shall provide the capability to reconcile the successful transmission and receipt of all data at the Cashless Toll Host System.

2.2.5.6 *Image Server to Cashless Toll Host System Interface*

Reconciliation of images to the video transactions and the status of the transfer of images and video transactions shall be maintained and reported at the Cashless Toll Host System.

529	The Contractor shall design and develop an interface from the image server(s) to the Cashless Toll Host System to transmit and track the status of the capture of images by the In-lane Systems for each video transaction and the subsequent transfer of images and video transactions to the existing CSC/VPC system.
530	The interface shall be capable of sending image reconciliation and transfer status data to the Cashless Toll Host System.
531	The Contractor shall provide the capability to reconcile the successful transmission and receipt of all images and video transactions at the existing CSC/VPC system.

2.2.5.7 *MOMS Interface to the Existing Commission Monitoring System*

532	The Contractor shall design and develop an interface from the MOMS to the current Commission monitoring system in accordance with the ICD to be finalized during Design.
533	The Contractor shall provide the capability to generate MOMS alarms and work orders based on status received from the monitoring system.

2.2.6 Maintenance Online Management System (MOMS)

There shall be a Maintenance Online Management System (MOMS) that supports the Cashless Tolling System Maintenance activities and Maintenance operations.

2.2.6.1 *Maintenance Online Management System (MOMS) – General Requirements*

534	Provide a MOMS that supports Maintenance operations for all Software and Hardware provided under this Contract.
535	Provide a MOMS that monitors, alerts and generates work orders in real-time for all processes, including but not limited to:
	• communications issues;
	• file transmission issues;
	• data exceptions;
	• Hardware issues;
	• Software issues or failures;
	• database issues;
	• issues with jobs, processes or data flows;
	• low storage space for each subsystem (configurable thresholds);
	• CPU utilization (configurable thresholds);

	• CPU load (configurable thresholds);
	• file system mounts (if applicable), and
	• disk IOs.
536	Provide a MOMS that monitors, alerts and tracks in real-time unusual activity triggered by users and systems, including but not limited to:
	• video transactions above threshold;
	• flushed transactions above threshold, and
	• other anomalies in daily toll operations.
537	Provide a MOMS that includes but is not limited to the following:
	• receiving and monitoring status messages of all system Hardware and Software;
	• receiving and transmitting alarm and status messages from the current Commission monitoring system;
	• is capable of local work order manual entry or email entry by Authorized Users;
	• storing data in a relational database to allow for data recovery and flexibility in reporting the raw data (including via Ad-hoc reporting);
	• tracking device failures and service requests;
	• assigning priorities and actions to events;
	• notifying (automatically) Maintenance personnel via reports, text and email;
	• assigning work orders to Maintenance personnel;
	• reassigning (manually) work orders to other Maintenance personnel;
	• escalating (automatically) work orders to other Maintenance personnel;
	• recording time of acknowledgement by Maintenance personnel;
	• recording time of acknowledgement by all subsequently assigned Maintenance personnel;
	• recording time of repair;
	• recording time of Equipment and process recovery;
	• recording completion of service calls;
	• providing automatic Alert for work orders not closed out in specified time;
	• maintaining and tracking Repair Maintenance Activity;
	• accepting and updating work orders via smart phones entries via secure communications;
	• tracking all system application Software components and Hardware via an asset management module;
	• role-based security;
	• containing an automatic system exception reporting for all processes that are not running;
	• containing an automatic system workflow exception reporting for all items that are not processing correctly or are hung in the system, and
	• providing hard copy reports on device failures and trouble resolution status.

538	Provide a MOMS that interfaces with the Commission SAP to exchange work order creation and disposition data, and Equipment inventory data as defined during the Design phase.
539	Provide a MOMS that supports maintenance functions, including but not limited to:
	• automatic system job/workflow/queue exception reporting and alerting for all elements that are not processing correctly or are hung in the system;
	• issuing electronic notifications via email or text to Maintenance staff when problems are detected;
	• prioritization of failures and Alerts that is configurable and alert Authorized Users when configurations are changed;
	• for the calculation of response times, repair times, and down time from the data entered by the Maintenance staff and automatically generated by the system, and
	• scheduling of preventive Maintenance through the MOMS that generates automatic work orders at the scheduled times.
540	Provide a MOMS that supports asset management, including but not limited to:
	• tracking of all system Hardware and Software items;
	• tracking of all system Hardware and Software locations;
	• tracking of all system Hardware and Software versions;
	• tracking of all Maintenance and service agreements;
	• maintains a list of vendors from where products were procured;
	• associates the original purchase order number to the individual item;
	• associates the original vendor number to the individual item;
	• associates all warranty information to the individual item;
	• provides an Alert prior to warranty expiration, and
	• provides automatic Alert for spare parts levels.
541	The MOMS will record all configuration data, and will be versioned after each system component change, including application of system patches.
542	Provide the capability for Authorized Users to access the MOMS screen through the single Cashless Toll Host System GUI.
543	Capability shall be provided to configure the priority level of each alarm and assign and change the escalation attributes.
544	Provide the capability to configure the initiation of a notification in the MOMS when an alarm is generated.
545	Authorized Users shall have the capability to indicate if an alarm should result in the generation of a work order and if an alarm should be considered in performance reporting.
546	Provide the capability to generate (on-demand and scheduled) daily, weekly and monthly performance reports as determined by the Commission during Design.

547	Provide the capability to generate operational, management and performance reports from the MOMS that include but are not limited to:
	• summarized and detailed alarm history;
	• Maintenance paging and response history;
	• work order status and tracking;
	• Equipment inventory and tracking;
	• Equipment availability;
	• preventive Maintenance;
	• pervasive Maintenance;
	• corrective Maintenance;
	• response and repair times for each of the priorities and level of Maintenance;
	• Equipment use history;
	• Equipment repair history;
	• total system availability;
	• sub-system availability for the In-lane Systems and Cashless Toll Host System;
	• Equipment versions, Software versions, firmware versions and serial numbers for all Equipment installed under this Scope of Work;
	• incident logs and lost revenue estimates;
	• Mean Time Between Failures (MTBF) for the preceding and current Maintenance periods and cumulative;
	• performance reports detailing compliance to the performance requirements;
	• detailed list of parts replaced as a result of Maintenance actions, with an identification of warranty versus non-warranty replacement;
	• status of removed parts and Equipment with an aging status for parts under repair or replacement (serial numbers, being repaired in Maintenance shop, purchase replacement part);
	• performance reports;
	• an exceptions report summarizing all unusual or significant occurrences during the period;
	• trend analysis for repetitive failure;
	• status of spare parts inventory, and
	• staffing report detailing positions, staff hours worked and performance.
548	Provide the capability to export relevant asset management reports for uploading into SAP.
549	When spare parts inventory is reduced to a configurable threshold quantity, automatic reorder Alerts shall be generated.
550	Provide a MOMS that has the ability to receive information (success or failure), including but not limited to:

	• backup;
	• time synchronization;
	• synchronization of primary and secondary systems;
	• Software updates and
	• file downloads.
551	In order to ensure that all tolling points are functional, all systems are operational, all the processes are working and file transfers are successful, Authorized Users shall have access to the MOMS screens. Capability shall be provided to verify the status of tolling point operations, the System and various file transfers, including the files transmitted and received from the PTC host system.
552	Tolling point and System status shall be shown in a pictorial view with the capability to drill down to the device causing the Alert and its associated error logs.
553	The MOMS screen shall show if required files were transmitted to all the lanes, the PTC host system and the existing CSC/VPC System.
554	In case of TSL and toll rate tables, the version in use shall be listed.
555	Authorized Users shall have the capability to re-initiate download in the event transmissions were not successful, for example toll rate tables.
556	Screens shall be available that show all the alarms generated by the various systems and subsystems, including the operating system and the database.
557	Failure of all devices, processes, programs, and scheduled tasks shall be forwarded to the MOMS screen that is accessible to authorized staff.
558	Various events and error logs shall be provided for each program that shall assist the system administrator to investigate problems.

2.2.6.2 *System Health Monitoring Software*

559	Provide System health monitoring Software that includes but is not limited to:
	• tight integration with the MOMS;
	• hardware and network health monitoring;
	• a Dashboard that graphically displays component's health;
	• comprehensive log reporting capabilities, and
	• integration with existing Commission monitoring software.

2.2.6.3 *Time Synchronization*

560	The Cashless Toll Host server shall be synchronized to a certified source Approved by the Commission using the standard network time protocol (NTP) at configurable intervals, but at a minimum of every five (5) minutes.
561	The zone controllers, AVI systems, AVC systems, LPICPS, image server(s), OCR/ALPR server (if the option to implement OCR/ALPR is exercised), DVAS, and other servers needed to support the requirements of this Scope of Work shall be synchronized to the Cashless Toll Host server or

	the Approved certified source.
562	If needed, synchronization messages shall be sent to devices that do not support off-the-shelf time synchronization Software.
563	All servers and controllers shall have a primary and secondary source for synchronizing time.
564	The time synchronization technique shall ensure that duplicate or incorrect transaction times are not possible.
565	The Cashless Toll System shall have the capability to handle daylight saving time changes.

2.3 Test Site

566	The Contractor shall install and setup a dedicated test site at a Commission Approved location. that shall be available for testing software and hardware changes or upgrades for the term of the Contract. The test site shall have the full suite of Equipment and Systems as an operational tolling point, and test transactions and data shall be transmitted to the Cashless Toll Host System test environment. The test site shall be monitored through the MOMS and maintained identical to other tolling point as specified in this Scope of Work.

2.4 National Interoperability

567	The Cashless Tolling System shall be Designed to accommodate future National Interoperability such that it supports the inclusion of multiprotocol readers and/or the inclusion of multiprotocol transponders. The Contractor solution shall allow for modifying and adapting the Design to incorporate new readers, antennas types and locations, and support the transition to the new interoperable solution with limited interruptions to the revenue collection.
568	The Contractor shall support the conversion to National Interoperability if it becomes available during the term of the Contract.

2.5 Accuracy Requirements

The Contractor shall provide a Cashless Tolling System that is Designed to meet the accuracy, performance and throughput requirements set forth in this Scope of Work. The testing logistics required to prove adherence to these requirements shall be detailed in the Master Test Plan and the test procedures as set forth in Section VI of the Scope of Work.

569	The sample size for each requirement shall be the greater of N = log (1 - C) / log (A); or 100,000 transactions for the Cashless Tolling System Operational and Acceptance Test described in Section 6.5; where: * N = Number in the sample * C = Confidence level * A = Accuracy

	A value of ninety five (95) percent shall be used for the confidence level. Accuracy and confidence levels are expressed as decimals.

2.5.1.1 *General Requirements*

570 The Contractor shall provide a Cashless Tolling System that meets an overall accuracy of at least 99.9 percent for vehicle detection and classification, transponder read and association and vehicle image capture and association. The metrics to validate overall accuracy requirements will be a weighted averaging of the subsystems and shall be defined by the following formula:

$$\begin{aligned} &Overall\ Accuracy\ Rate \\ &= (Vehicle\ Detection\ Rate\ x\ Vehicle\ Detection\ Weight\ Factor) \\ &+ (Transponder\ Association\ Rate\ x\ Transponder\ Association\ Weight\ Factor) \\ &+ (Vehicle\ Classification\ Rate\ x\ Vehicle\ Classification\ Weight\ Factor) \\ &+ (Image\ Capture\ Rate\ x\ Image\ Capture\ Weight\ Factor) \end{aligned}$$

Where:

Vehicle Detection Rate, Transponder Association Rate, Vehicle Classification Rate and Image Capture Rate are obtained from the transactions collected during the Cashless Tolling System Operational and Acceptance Test described in Section 6.5.

	Vehicle Detection	Transponder Association	Vehicle Classification	Image Capture
Weight Factor	0.40	0.15	0.15	0.30

571 The Contractor shall provide a Cashless Tolling System that meets the accuracy requirements described below. The Contractor shall validate System compliance to the accuracy requirement by collecting data to the required sample size in live traffic operations as described below for each requirement.

572 Data collection shall include the use of live traffic and controlled vehicles (vehicles with a known transponder status) intermingled with live traffic to emulate normal operations such as congestion and traffic patterns as specified below for each requirement.

573 Prior to the start of testing the System shall be confirmed to be fully operational and ready for testing. Transactions that fail to meet the requirements shall be reviewed and audited and anomalies investigated. Exception criteria identified during the Design phase and the development of the test procedures that fall outside the System Design may be excluded from the accuracy calculations.

2.5.1.2 *Transponder Capture Rate*

574	A transponder mounted in accordance with the manufacturer mounting instructions shall be captured by the AVI system under all conditions within the Design specification described in this Scope of Work with an accuracy rate as defined by the greater of the E-ZPass Group or manufacturers specifications This requirement applies to all tolling point types based upon the transponder mix collected during the testing period for the Commission Approved sample size.

2.5.1.3 *Transponder Reporting Accuracy*

575	A transponder that is detected and read by the AVI reader shall be reported to the zone controller with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of transponder reads collected during live traffic operations.

2.5.1.4 *Transponder Write Performance Accuracy Rate*

576	The AVI system shall successfully and accurately complete a write operation to associate data with a passing vehicle with an accuracy rate as defined by the greater of the E-ZPass Group or manufacturers specifications under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of transponders captured during live traffic operations.

2.5.1.5 *Vehicle Detection Accuracy*

577	The zone controller shall detect and report vehicles traveling through the tolling point under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.

2.5.1.6 *Transponder Association Accuracy*

578	Every Transponder that is reported to the zone controller shall be assigned to the correct vehicle under all conditions within the Design specification described in this Scope of Work. This requirement applies to all tolling point types based upon the transponder penetration rate collected during the testing period for the Commission Approved sample size. The resulting accuracy will be used in the calculation of the overall accuracy.

2.5.1.7 *Vehicle Classification Accuracy*

579	The zone controller shall classify all vehicles in accordance with the Commission classification structure traveling through the tolling point with accuracies defined below under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.

2.5.1.8 *Image Capture Reporting Accuracy*

580	The System shall capture, report and correctly associate an image of the vehicle to the correct vehicle as defined in the Commission Business Rules under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.

2.5.1.9 *License Plate Extraction (OCR/ALPR) Accuracy (if the option to implement OCR/ALPR or VEL is exercised)*

581	For all video transactions without exception, the System shall perform OCR/ALPR on minimum seventy (70) percent of the images to obtain the license plate, jurisdictions and plate type with at least 99.95 percent accuracy of for the States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA. For vehicles identified as requiring front plates the results shall be from the front image. Testing shall require the use of vehicle data collected during live traffic operations.

2.5.1.10 *Overall Image Quality*

582	For all video transactions, at least 99.95 percent of the images that are included in the calculation shall have a human readable license plate, jurisdiction and plate type. For vehicles identified as requiring front plates the front image shall be used. Testing shall require the use of vehicle data collected during live traffic operations. A plate shall be considered excluded from Overall Image Quality calculation only when:
	• the vehicle has no plate;
	• the plate numbers/letters are not human readable due to damage or obstruction.

2.5.1.11 *Transaction Processing Requirements*

583	All transactions generated by the zone controllers in accordance with the above accuracy requirements shall be reported and transmitted for processing to the Cashless Toll Host Systems with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.

2.5.1.12 *False Read Processing*

584	The Cashless Tolling System false read processing (example cross lane reads and duplicate reads) shall be less than 0.001 percent of the transponder transactions under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations and test results will be verified by monitoring the CSC for accurate account posting and anomalies will be investigated.

2.5.1.13 *Video Transaction and Image Transmission Requirements*

585	All video transactions and images from the Cashless Tolling System shall be transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.

2.5.1.14 *AVI Transaction Transmission Requirements*

586	All AVI transactions from the Cashless Tolling System shall be transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.

2.5.1.15 *Vehicle Throughput Requirements*

587	The Cashless Tolling System shall process a minimum of 2,400 vehicles per hour per lane with a video transaction rate of one hundred (100) percent. Testing shall include the simulation of vehicle events that exercise all of the toll collection equipment and devices.

2.5.2 Mean Time Between Failure (MTBF)

588	The Cashless Tolling System shall be required to meet specific minimum duration requirements for components and subsystems in continuous operation. This time requirement is defined as the Mean Time Between Failure (MTBF). The Contractor shall provide all third-party MTBF on individual components to be used in the System.
589	MTBF requirements for all components of the Cashless Tolling System shall meet the MTBF as specified below in Table II-1:

Table II–1: MTBF Requirements

Component	MTBF (hours)
Redundant Zone Controller	30,000
Automatic Vehicle Identification (AVI) System Components	20,000
Automatic Vehicle Classification (AVC) System Components	30,000
License Plate Image Capture and Processing System (LPICPS) Components	30,000
Cashless Toll System Servers	50,000
Network Devices	50,000

590	The reliability of the System components shall be calculated based on the following MTBF calculation: MTBF = # units x test period (hours)/ # chargeable failures

2.5.3 Availability

591	The Contractor shall meet availability requirements for the following elements of the Cashless Tolling System:

Table II–2: Availability Requirements

System or Subsystem	Availability Requirements (Monthly) Percentage (%)
Toll Zone Lane Systems	99.95
Cashless Toll Host System	99.95

592	The availability requirements shall be separately calculated and applied to an available lane with all of its subsystems properly functioning and available to collect revenue and send required transactions to the Cashless Toll Host System and images to the image server(s)/CSC VPC systems.
593	The availability requirements shall be separately calculated for the Cashless Toll Host System with all of its devices, Software, applications and processes properly functioning and available to the Authorized Users, successfully transmitting transactions to the PTC host systems and the CSC/VPC systems, successfully transmitting files to the SAP system and communicating with the in-lane systems.
594	Availability shall be calculated based on the following calculation: Availability = 100% - [Hours Downtime / (# Days in time period measured * 24)]
595	The Cashless Tolling System compliance to the availability requirements shall be validated during the Operational and Acceptance Test described in Section 6.5 Cashless Tolling System Operational and Acceptance Test.
596	During the Cashless Tolling System Maintenance and Software Support Services, the Contractor shall prove the Cashless Tolling System compliance to the availability requirements as described in Section 7.22 Performance Requirements for the Cashless Tolling System and Liquidated Damages.

2.5.4 Chargeable and Non-Chargeable Failures

For purposes of calculating MTBF and Availability performance requirements for testing, as detailed in Section VI, and for Maintenance performance, as detailed in Section VII, chargeable and non-chargeable failures are defined as follows:

2.5.4.1 *Chargeable Failures*

597	Chargeable failures include any failures that are not specifically identified as non-chargeable, including, but not limited to the following:
	• A malfunction which prevents the Cashless Tolling System component (Hardware or Software) from performing its designated function, when used and operated under its intended operational and environmental conditions as detailed in this Scope of Work.
	• A malfunction that poses a threat to the safety of the Cashless Tolling System components, PTC customers, employees or others.
	• An occurrence where data is not successfully transmitted between the lanes and the Cashless Toll Host System and images from the lanes to the image server(s) unless such failure is due to the WAN provided by the Commission.
	• A failure of Equipment or Software that allows data loss to occur on the Cashless Tolling System.
	• A failure of Equipment or Software that allows revenue loss to occur on the Cashless Tolling System that is not already accounted for as a separate performance failure.
	• Software anomalies and bugs that affect the performance and operation of the Cashless Tolling System.
	• Shutdown or unavailability of the Cashless Tolling System unless specifically directed by the Commission for reasons not under the control of the Contractor.
	• Failure to properly register or report a transaction.
	• Failure to properly reconcile the Cashless Tolling System.
	• Failure to electronically send or receive transaction information.
	• Failure to generate the reports required to reconcile and audit the System.

2.5.4.2 *Non-Chargeable Failures*

598	Non-chargeable failures shall include:
	• force majeure, as defined in the Contract Documents;
	• vandalism;
	• failure of a test facility or test instrumentation;
	• failure of a component the Commission has responsibility;
	• System component failures caused by externally applied stress conditions outside of the requirements of this Scope of Work;
	• System component failures caused by environmental or operating conditions outside of the requirements of this Scope of Work;
	• normal operating adjustments as allowed in the Test Procedure or Maintenance Plan, as applicable, and
	• failures that are customer or user induced.

III. CASHLESS TOLLING SYSTEM TRANSITION

All Commission facilities including barrier, ramp and the mainline will be transitioned to cashless tolling in accordance to *Attachment 10: Cashless Tolling Concept Plan* and the Approved project schedule. The Contractor's installation and transition plan shall support the conversion of the existing toll collection system to the Contractor's Cashless Tolling System.

3.1 Cashless Tolling System Transition – General Requirements

599	The Contractor shall accommodate the various installations of the Cashless Tolling System Implementation in accordance with the Approved schedule.
600	All changes to the System to accommodate technology upgrades and meet the Contract requirements shall be the responsibility of the Contractor.
601	The Contractor schedule shall be sufficiently flexible to accommodate modifications or changes such as early completions or delays in start or completion of phases that would normally be expected in a multi-phase, multi-contractor construction schedule.

3.2 Cashless Tolling System Implementation

602	The Contractor shall procure, Design, test, and install the Cashless Tolling In-lanes Systems, including the redundant Cashless Tolling In-lane System Hardware, Software, Equipment, Interfaces and communications provided in the toll equipment building at each tolling point.
603	The Cashless Toll Host Systems shall be tested and interface testing completed prior to commencing Onsite First Installation Test (OFIT) for the Cashless Tolling System at the initial Implementation.
604	The installation and Commissioning of all cashless tolling point implementations shall be in accordance with the Approved Transition Plan.

3.3 Transition to Cashless Tolling

3.3.1 Cashless Tolling Transition Plan

605	The Contractor shall provide a detailed Transition Plan for Commission Approval that addresses all critical transition elements and activities associated with the installation and Implementation of the Cashless Tolling System, including Cashless Tolling In-lane Systems; Cashless Toll Host Systems, and interfaces to the PTC host system and the existing CSC/VPC system.
606	The Transition Plan shall address the integration and interface of the Cashless Toll Host System to SAP when all existing facilities are converted to cashless tolling and the existing PTC host system is de-commissioned.
607	The Transition Plan shall address the migration of data from the current PTC host to the Cashless Toll Host System for new facilities as well as when existing facilities are converted to cashless tolling and the existing PTC host system is de-commissioned.
608	The Transition Plan shall, at a minimum, include the installation, Commissioning, Revenue

	Collection and Acceptance of Cashless Tolling In-lane Equipment, the transition (where applicable) from cash collection to cashless tolling operations, and Acceptance of each Implementation Phase of the Project.
609	The operational requirements, interfaces, and/or Equipment installation for the Cashless Tolling System and its interface to the PTC host system, SAP and existing CSC/VPC System shall be included.
610	Any temporary processes implemented to support the transition shall be documented in the Transition Plan including eventual replacement process if applicable.
611	All points of coordination or reliance on third-party deliverable, for example the WAN communications network shall be clearly identified in the Transition Plan.
612	The impacts to existing systems including those in the proximity of the tolling point shall be addressed in the Transition Plan.
613	The Cashless Tolling System Transition activities shall be coordinated with the civil contractor, civil designer and existing system integrators and Approved by the Commission in order to not interfere with on-going and continuing maintenance and operational requirements.
614	In order to ensure a seamless transition, the following activities shall take place prior to opening the first tolling point to cashless tolling in revenue collection.
	• Upon Approval to proceed with a Commissioning Test, the Contractor shall conduct such test at each tolling point prior to opening each location to traffic and revenue collection. Since each location may also include civil construction, the Contractor shall be responsible for interfacing and coordinating with the civil contractors for scheduling and maintenance and protection of traffic requirements during the conversion to cashless tolling.
	• The Cashless Toll Host servers and central image servers (if implemented) shall be installed and commissioned at the primary and secondary locations and its interface to the PTC host system and existing CSC/VPC shall be validated.
	• The MOMS shall be configured for go-live; inventory recorded; technicians scheduled, and notifications set up;
	• The DVAS shall be installed and validated and Authorized Commission personnel shall have access to the DVAS;
	• The OFIT shall be conducted and Cashless Tolling System functionality and performance validated at the initial tolling point installation;
	• An end to end test shall be conducted in the PTC host system and existing CSC/VPS system test environments, and
	• The Commission shall confirm the existing systems are ready for Conversion and give Approval for Go-Live. At such time, the Cashless Tolling System shall be switched over to the production PTC host system and existing CSC/VPC system.
615	The Contractor shall plan for possible variances in the sequencing of the transition due to construction and readiness of the CSC/VPC systems and operations in its Transition Plan.

IV. CASHLESS TOLLING SYSTEM INSTALLATION REQUIREMENTS

This section details the requirements for the installation of the In-lane Cashless Tolling System and the Cashless Toll Host System. Unless Approved by the Commission, no System installation shall occur prior to the satisfactory Approval of Installation Design and the Factory Acceptance Test.

4.1 Installation Program

616	The Contractor shall have an Installation Program that addresses all aspects of the installation of the In-lane Cashless Tolling Systems and the Cashless Toll Host System, including all installation Design, submissions and coordination.
617	The Contractor is responsible for the Design, procurement, installation, cabling, configuration, check-off, and testing of all Hardware, Equipment, communications, and Software and fixtures provided by the Contractor as part of the In-lane Cashless Tolling Systems at each of the tolling points identified by the Commission.
618	In the event the Contractor decides to re-use existing hardware, conduits and junction boxes, the Contractor is responsible for ensuring that such elements are in their fully operational condition and will meet the requirements of the Contract for the term of the Contract.
619	The Contractor shall install the Cashless Tolling In-lane servers and Hardware in the toll equipment building provided by the Commission through the civil contractor.
620	The Contractor shall install the Cashless Toll Host Systems at the primary and secondary locations.
621	The Contractor shall work with the Commission to test the WAN and the connections to the PTC host system and the existing CSC/VPC systems. Testing shall include expected traffic loads and all types of production operation data
622	The Contractor shall coordinate all lane closure activities with the Commission and the civil contractor.
623	The Contractor shall validate and approve the Commission and the civil contractor infrastructure installation and confirm they are in compliance with the Approved civil drawings.
624	The removal and disposal of the existing equipment not re-used by the Contractor will be responsibility of the civil contractor and the Contractor shall support the coordination of this work.
625	The Contractor shall install and tune the certified AVI Equipment to the AVI vendor specifications in compliance with the E-ZPass Group requirements. In addition, the AVI vendor shall certify that the lanes are tuned to the Approved AVI specifications.

4.2 Installation Plan

626	The Contractor shall develop and submit an installation plan that identifies its approach to installation and drawing package submissions and documents all installation related activities for the Project. The installation plan shall be the master document from which the elements of the System shall be installed.
627	The installation plan shall include and define, at a minimum, the following items:
	• The installation schedule detailing all activities, shifts and resources for the installation of the In-lane Cashless Tolling Systems and the Cashless Toll Host Systems, including third-party and civil contractor activities. Once the baseline schedule is Approved by the Commission, updates during the installation periods identifying all schedule changes and Work progress in the form of percentage completions shall be submitted to the Commission for Approval.
	• The minimum resource allocation requirement for any installation phase and segment.
	• How the Contractor manages delivery and staging of the Cashless Tolling In-Lane and Host Equipment to be installed, including any staging, installation and testing performed at the Contractor or third-party facilities and their subsequent delivery and installation at the production sites.
	• The coordination between other contractors, including the civil designer, civil contractor(s), service providers, and the existing contractors.
	• Coordination of the lane closures with the civil contractor(s) for each phase of the Pproject.
	• Coordination with the civil contractor(s) for the installation of the toll equipment building, the generators and UPS.
	• Coordination activities as applicable with other third-party entities for the various interfaces.
	• Testing of the Commission provided fiber communications network for connection to existing PTC host system and the existing CSC/VPC system.
	• Quality control, quality assurance, inspection, and testing processes including validation of Contractor installation to the requirements of the Contract installation drawings.
	• The order in which Equipment items are to be installed with estimated durations.
	• Special or unique installation requirements.
	• A detailed component list and a description of how each item version number and serial number shall be recorded for each installation and configuration into the MOMS.
	• Organization Chart defining Key Team Personnel, roles and responsibilities and contact information.
	• Contingency Plan.
	•

4.3 Installation and Construction Coordination and Meetings

During the Project Design, development and installation periods there shall be a series of meetings between the Contractor, the Commission, existing contractor, civil designer and the civil contractor(s) to

clearly define and develop the installation requirements, methodology, timetables, test plans, roles, and contingency plans. The Contractor is responsible for coordinating and scheduling all meetings necessary to complete the Design and installation phase of the Project.

628	The Contractor shall schedule, manage and attend weekly installation meetings during the active Design and installation phases of the Project and report on progress of the installation. The Contractor shall identify and communicate any issues regarding Cashless Tolling System construction and installation immediately upon discovery to the civil contractor(s), existing system integrator and the Commission.
629	The Contractor shall ensure that the appropriate personnel are present at these meetings who can represent the Contractor's interest and provide the information necessary in a meaningful manner.
630	Prior to the meeting, the Contractor shall update the installation schedule based on the construction schedule and all changes shall be identified.
631	The Contractor shall prepare and distribute a meeting agenda at least forty-eight (48) hours prior to the scheduled meeting. The meeting agenda shall consist of those items pertaining to the installation and schedule for the previous and current week's installation efforts and for an agreed to "look ahead" period.
632	It is the Contractor's responsibility to make sure all issues that arose during the installation activity for the week are addressed and resolved or is scheduled for resolution.
633	At these meetings, the Contractor shall also be prepared to address any issues or questions raised by the civil designer, civil contractor, other contractors, and the Commission or its representative.
634	The Contractor shall document the meeting discussions and distribute the meeting minutes to the team. The Contractor shall also record and maintain an action items list that tracks all installation related issues.

4.3.1 Construction Coordination with Infrastructure Contractors

The Contractor shall coordinate all installation activities with the civil contractors on new cashless tolling facilities to ensure all Cashless Tolling System Equipment specifications are addressed in the Design and installation of the cashless tolling infrastructure. *Attachment 2: Cashless Tolling Installation Responsibility Matrix* defines the areas of responsibility for the parties involved in the Project Design and construction for new cashless tolling facilities.

635	The Commission (or its civil contractor) is responsible for the construction of the overhead structures/toll gantries, installation of the toll equipment building and provision of the generators for the new tolling point, and the Contractor shall coordinate closely with the Commission, and the Commission contractors.

636	The Contractor shall participate in the Design and installation of the cashless tolling infrastructure at the tolling points, including but not limited to:
	• provide all required Design and installation drawings, operating requirements and installation specifications to the Commission and the civil contractors for all toll system Equipment provided;
	• support and supply all information requested by the civil contractor and civil designer in the form of request for information (RFI);
	• review all civil contractor provided drawings with respect to the toll system;
	• approve all aspects of such drawings related to the toll system, and
	• ensure the Cashless Tolling System infrastructure needs necessary to meet the requirements set forth in this Scope of Work are met with regard to such Design.
637	The Contractor shall be responsible for ensuring that the locations, positions, installation, connections and other elements of the Contractor inputs identified on the Design and installation drawings provided by the Contractor, for all Contractor and Commission provided Equipment, whether in-roadway, structure/toll gantry mounted, in the toll equipment building or otherwise located are accurate and correct.
638	Contractor shall also ensure that the installed roadway; infrastructure; structures/toll gantries; toll equipment building; UPS, and generators meet the Design requirements provided by the Contractor and shall approve such installed work with regard to the Design provided.
639	Contractor shall cooperate with the Commission and infrastructure contactors to minimize required number of lane closures and to maximize the use of other scheduled lane closures. The Contractor shall transmit all lane closure requests to the Commission for approval.
640	Contractor shall work with the Commission and agree to a reasonable plan for scheduling and approving lane closures, including a procedure for advance notice of cancellations of lane closures and allowable conditions for such cancellations as described in this Scope of Work. The civil contractor is responsible for administering all lane closures and traffic controls during the installation phase and for all testing through Acceptance.

4.3.2 Construction Coordination with Civil Contractor

641	The Contractor shall coordinate all installation activities with the civil contractor. *Attachment 2: Cashless Tolling Installation Responsibility Matrix* defines the areas of responsibility for the parties involved in the Project Design and installation on the cashless tolling facilities.

4.4 Installation Requirements

642	The Contractor shall be responsible for procurement, installation, cabling, termination configuration, testing, and check-off of all Equipment and Software required to meet the requirements of the Contract.

643	The Contractor shall install all appropriate In-lane System servers and Equipment required by the Cashless Tolling System in the toll equipment building provided by the Commission through a third party.
644	Procurement, installation, configuration, and testing of all local area communications Equipment and connection to the Commission installed network equipment in the toll equipment building shall be the responsibility of the Contractor as further set forth in this Scope of Work.
645	Procurement, installation, configuration, and testing of all appropriate Cashless Toll Host System servers, Equipment and Software required by the Cashless Toll Host System at the primary and disaster recovery locations and validating communications to its interfacing systems shall be the responsibility of the Contractor as further set forth in this Scope of Work.

4.5 Compliance to Standards

The Contractor shall adhere to all installation standards, applicable laws, ordinances and codes as required.

646	The Contractor shall meet all electrical codes, traffic control, seismic considerations, calibration, configuration, and environmental requirements of and including, but not limited to:
	• Equipment manufacturer's;
	• NEC;
	• UL standards;
	• PTC;
	• PennDOT;
	• FHWA;
	• IEEE (Institute of Electrical and Electronics Engineers);
	• OSHA requirements, and
	• any local authorities having jurisdiction.
647	The Contractor shall adhere to all specifications of the latest Commission Standard Specifications at time of construction unless the Contractor receives written notification by the Commission which overrides the Standard Specifications. Commission Standard Specifications are located at: https://ebs.paturnpike.com/generalinformation/documents
648	The Contractor shall be responsible for all costs associated with any permits, plan reviews, and inspections related to toll system work.
649	It shall also be the Contractor's responsibility to procure all documentation required to install and adhere to the proper installation standards, law, ordinance, or codes.
650	The Contractor shall procure Services of Subcontractors qualified to work in this industry. If a vendor's component requires a vendor approved installer, the Contractor shall use an approved component installer, including qualified vendor staff.

4.6 In-lane System Installation Requirements

651	The Contractor shall supply all personnel, tools, vehicles, materials and Equipment required to perform the complete installation of the Cashless Tolling System, including but not limited to all Equipment and vehicles required for overhead installation Work on the overhead structures/toll gantries; specialty Equipment for preparation and saw-cutting of loops as required, and provide necessary test vehicles to adequately test the installed System in accordance with the Approved test plan.
652	Where the Contractor is providing subsystem components manufactured by a third party vendor, the Contractor shall ensure that all such components are installed in accordance with manufacturer's installation guidelines. Third-party onsite services shall be obtained as applicable to install, configure and tune the first on-site installation.
653	The Contractor shall provide onsite and remote support for such subsystem manufacturer components as necessary to ensure the proper installation and operation of its Equipment at no additional cost to the Commission. All third party Equipment and subsystems shall be certified by the manufacturer as being compliant with their installation guidelines and meeting Contract requirements.
654	The installation responsibilities for the Cashless Tolling System shall include but not be limited to:
	• Furnish and install uninterruptable power to all Cashless Tolling System Equipment on the overhead structures/toll gantries and in the toll equipment building. UPS and generator will be provided by the Commission.
	• Furnish and install all connecting conduit from wire ways and conduits provided and installed by others and/or stub conduits to the Equipment. The civil contractor(s) will install the conduits from the toll equipment building to the demarcation point on the overhead structures/toll gantries as shown in *Attachment 6: Installation Demarcation Diagram*.
	• Furnish and install separate ground wires for the Cashless Tolling System, surge protection devices (SPD), junction boxes, pull boxes, conduits, and other such items as required by the installation standards and requirements. All exposed junction boxes, pull boxes and other hardware shall be either zinc coated and epoxy painted or stainless steel;
	• Furnish and install all wiring for all in-lane Equipment and connections to the equipment racks in the toll equipment building. This includes the proper termination of all power, communication, and RF cables and/or wiring (copper or fiber optic) required to connect the individual components into a fully operational System as specified by the manufacturer.
	• Furnish and install all Equipment racks required for the in-lane electronics in the toll equipment building.
	• Furnish and install all AVI readers in the toll equipment building (if applicable) or at Approved Commission location.
	• Furnish and install all zone controller computers (Hardware and Software) into the equipment racks and test it connection to the zone controller and the facility servers (if provided)/ Cashless Toll Host Systems.

	• Furnish and install all electronics and other devices in their respective equipment racks as required to provide a fully operational System.
	• Furnish and install all Equipment mounting brackets to support structures for the installation of all toll system Equipment on the mounting arms on the overhead structures/toll gantries.
	• Furnish and install the AVC system Equipment, including in-pavement sensors and overhead mounted Equipment and controllers as specified by the manufacturer. Includes all the Commission Approved materials, Equipment and supplies required for saw-cutting, wiring and sealing of wires in the roadway.
	• Install the AVI system Equipment, including antennas, readers, related Equipment, cables, and any support brackets required. All AVI mounting Hardware, junction boxes, and cables shall be procured and supplied by the Contractor.
	• Synchronize the new Cashless Tolling System with existing AVI system, including the provision of required cables as needed.
	• Furnish and install the LPICPS Equipment, including cameras, LPICPS illumination, and any video controller Equipment, sensors, Software, controllers/servers, or specialty Equipment associated with the LPICPS.
	• Furnish and install facility servers (if required) in the equipment racks, including Software and test its connection to the zone controller and the Cashless Toll Host Systems.
	• Validate all cable and wire terminations via a test process to ensure that the cable is connected to the correct location on each end and that the cable/wire is properly terminated.
	• Power up and provide a field check out/installation acceptance test of all systems, to be witnessed and Approved by the Commission or its Designated Representative. Provide the completed installation checklist as described in Section III of this Scope of Work.
	• Tuning and testing of the AVI system, as described in, and in full accordance with, manufacturer's guidelines.
	• Calibration and testing of LPICPS in full accordance with manufacturer's guidelines and to meet the OCR/ALPR requirements specified in the Scope of Work (if the option to implement OCR/ALPR is exercised).
	• Calibration and testing of AVC system in full accordance with manufacturer's guidelines.
	• Installation, calibration and testing of the DVAS cameras and Equipment.
	• All other items, materials, and Equipment to complete installation in accordance with the Contract.

4.7 Cashless Toll Host System Installation Requirements

655	The Contractor shall coordinate all Cashless Toll Host System installations and testing of the WAN and interfaces to the existing systems with the Commission and existing system integrator.

656	The Contractor shall install all Cashless Toll Host Systems, including primary and secondary host servers and central image servers (if provided) at the primary and secondary locations specified in the Scope of Work and Approved by the Commission.
657	All servers, storage devices, communications Equipment, and other Cashless Toll Host System Hardware shall be installed in the designated locations as prescribed in the drawings submitted by the Contractor and Approved by the Commission.
658	The Contractor is responsible for the following activities, including but not limited to:
	• furnish, install, configure and test the necessary servers in accordance with the Approved Design documents;
	• furnish, install and test the storage units and backup devices;
	• furnish, install and test the network Equipment at the primary and secondary Cashless Toll Host locations;
	• validate communications to the Commission installed network equipment at the toll equipment building;
	• establish and validate communications from the Cashless Toll Host System (host servers and image servers) to each of the tolling points at the toll equipment building;
	• establish and validate communications from the Cashless Toll Host System (host servers and image servers) to the existing CSC/VPC system;
	• establish and validate communications from the Cashless Toll Host System to the PTC host system and SAP;
	• furnish, install and validate third-party Software and Contractor Software on all servers and Equipment required to support the Cashless Toll Host System;
	• furnish, install, configure and test all servers and Equipment for correct point-to-point installation, proper connectivity, acceptable termination of all cables and successful communications linkage;
	• Configure the Cashless Toll Host System to support interfaces as defined in the Approved ICDs and
	• All other items, materials, Equipment and Software required to complete installation of a fully functional Cashless Toll Host System in accordance with the Contract.

4.8 Installation Checklist

659	The Contractor shall develop an installation checklist that tracks the progress and completion of all installation activities for the Cashless Tolling In-lane System installation and the primary and secondary Cashless Toll Host System facilities installation.
660	The checklist shall be the document detailing those items required for the installation crew and technical team to complete the installation process for all Equipment and components, including terminations, connections and configurations.

661	A copy of the checklist signed and approved by the Contractor, attesting to the completeness of the installation, shall be provided to the Commission after the completion of the installation activities for each lane at each tolling point.
662	The Contractor shall conduct a final inspection of all installations and certify the installation Work.
663	The Commission reserves the right to obtain the services of the Facilities Department to witness the Contractor inspection and conduct an independent inspection. The Contractor shall coordinate and support such inspections at each facility.
664	The checklist shall identify all discrepancies and exceptions and Contractor shall be responsible for all corrections.
665	The checklist shall document all changes identified during the installation process and all such changes shall be Approved by the Commission or its Designated Representative.

4.9 Electrical Work

666	Electrical Work to be performed under this Contract shall include, but not be limited to the following general items of Work:
	• Provide and install surge protection devices as required to protect the Cashless Tolling System Equipment and electronics.
	• Install junction boxes and terminate new cable and conduit attachment devices, where applicable.
	• Bond all conduits, manhole frames, metallic junction boxes, and other conductive items to the grounding system in conformance with the Commission and PennDOT Standard Specifications, the NEC and other authorities that have jurisdiction.
667	All electrical Work shall be performed in accordance with the applicable regulations and Approved by the Commission and other authorities having jurisdiction. Appropriate NEC compliance shall be adhered to with all electrical articles for installation pertaining to wiring, enclosures, and other electrical Equipment in hazardous locations. UL labels shall be provided for all electrical panel boards, enclosures, and accessories.
668	All electrical Equipment must be inspected prior to installation for defects that could damage the Equipment or harm personnel. Any Equipment found to have defects shall not be installed but shall instead be replaced with a fully functioning replacement.
669	All electrical Equipment shall be properly grounded for safety. Equipment shall be furnished with grounding pads or grounding lugs. All ground connections shall be cleaned immediately prior to connection.
670	The Contractor shall provide all grounding material required for installation and all installations shall be in compliance with the applicable standards.

4.10 Lane Closure and Traffic Control Requirements and Conditions

671	The Commission will provide all MPT activities associated with completing Contractor Work during the Implementation Phase. All lane closures shall be coordinated with the civil contractor and lane closure schedules shall be submitted to the Commission is advance for Approval. Lane closure schedules and lane closure requirements can be found on the Commission website at https://www.paturnpike.com/business/engineering_standards.aspx.
672	In-lane Cashless Tolling Equipment installation shall be scheduled to minimize traffic delay during the installation process. The Contractor shall make every effort to schedule Work around peak traffic movement times. All lane closures shall be coordinated with the Traffic Operations Center.
673	In the event that extended lane closures (lane closure exceeding 2 hours) are required, the lane closures shall be completed between the hours of 11:00 P.M. EST and 6:00 A.M. EST, excluding Holiday periods as set forth in the lane closure requirements.
674	Lane closures scheduled for less than 2 hours shall be Approved by the Commission in accordance with the documentations provided on the website, and shall not occur during peak traffic times, and shall be solely at the Commission's discretion for Approval and continuance in cases where the lane closure is underway.
675	The Contractor shall follow the requirements as stipulated in the latest applicable Commission's Maintenance and Protection of Traffic Standards: https://www.paturnpike.com/business/engineering_standards.aspx.
676	Any Work involving removal/relocation of Equipment (loosening or removal of nuts/screws, cables, connectors etc.) shall be done with appropriate lane closures during nighttime period or off peak hours as listed within this section.
677	Activities that require no removal/relocation of Equipment (for example, testing/monitoring functions) shall require no lane closures (Work shall be completed from the structure/walkway above live traffic). Activities shall be limited only to adjusting or shifting tethered toll Equipment in place without removal of Equipment, mounting devices, etc.
678	All Equipment and tools shall be tethered at all times when working above open/live traffic.

4.11 Contingency Plan

679	A detailed contingency plan shall be prepared for reopening closures to public traffic. A general contingency plan shall be included in the Installation Plan; however, a site specific contingency plan shall be submitted to the Commission before Work at the job site begins.

4.12 Work Standards and Requirements

680	The Cashless Tolling System Equipment installation shall be performed to an Approved set of Plans, which has previously been submitted and Approved by the Commission or their Designated Representative.
681	The Contractor shall provide Project management and oversight of all Work performed. At all times when installation Work is taking place, the Contractor shall have an individual designated in the Organization Chart as Site Manager onsite to supervise the installation.
682	The Contractor shall install the Cashless Tolling System Equipment to the highest standards, using experienced and knowledgeable personnel. For example, journeyman electricians shall terminate all cables, wiring, or fiber optic cables.
683	All tools such as crimpers, fiber optic termination tools, and test Equipment shall have been properly calibrated prior to being used.
684	The Contractor shall provide a safe environment for the installation process in accordance with all applicable local, State and federal requirements, as well as any Commission policies. Examples include but are not limited to the following:
	• safety harnesses shall be included and employed on all lifts, and the personnel trained on their use;
	• hard hats and safety vest shall be worn in all construction areas;
	• safety toe shoes shall be worn in construction areas and around active roadways while performing installation processes;
	• Contractor issued identification badges shall be worn at all times, and
	• regular safety meetings shall be scheduled to review safety procedures.

4.13 Design and Documentation during Construction and Installation

4.13.1 Engineering Design

685	The Contractor shall secure the services of a fully-qualified engineering design firm(s) for the purpose of performing all infrastructure related engineering Design (civil, structural, electrical, mechanical, and architectural) and the preparation of related Plans and documentation under the Contract.
686	All Design Work shall be performed under the direct supervision of a Licensed Engineer of the appropriate discipline in the State of Pennsylvania. All design professionals shall be licensed and authorized to practice in the State of Pennsylvania.
687	If the Engineering Design effort is performed by the Contractor, the Contractor shall submit documentation showing that the Contractor has met the required qualifications described in this section.

4.13.2 Document Control

688	The Contractor shall maintain a Configuration Management System to control all Project-related documents and drawings. Each document shall be properly titled, date updated, numbered by revision and version and shall incorporate signature blocks for authorship and approvals. Only the latest Approved drawing version may be used for installation.
689	All documentation regarding the lane Equipment and Cashless Toll Host System Equipment installation shall be maintained by the Contractor. All drawings and other such documentation shall be made accessible to the Commission for review.
690	The Contractor shall maintain all non-conformance reports (NCR) submitted by the inspectors and document the correction and resolution of all issues identified.

4.13.3 Installation Design and Drawings

691	The Cashless Tolling System Equipment shall be installed on existing infrastructure or overhead structures/toll gantries that will be designed and constructed by others separately procured by the Commission.
692	The Contractor shall provide the installation requirements including acceptable tolerances for the Cashless Tolling System Equipment, including all related Plans and documents. The civil designer and civil contractors shall rely on the installation requirements provided by the Contractor to design and construct the overhead structures/toll gantries for the Cashless Tolling System Equipment to function as intended, and Contactor shall be fully responsible for the accuracy of its installation requirements.
693	The installation requirements provided by Contractor shall be consistent with those provided in Contractor's Proposal and shall accommodate the selected design from the samples provided in *Attachment 5: Concept Plan for Overhead Structures/Toll Gantries*.
694	The Contractor shall certify the installation requirements provided as accurate and appropriate for its intended purpose to the satisfaction and Approval of the Commission.
695	Contractor shall indemnify all related parties as more fully described in the Terms and Conditions for any damages that result from reliance on the installation requirements provided by Contractor.
696	The Contractor shall submit shop drawings detailing the installation Design that shall be used onsite for installation Work. Detailed drawings shall be provided for each site where Equipment procured and supplied under the Contact shall be installed.
697	The Contractor shall submit the following Design drawings as part of the drawing package in accordance with the Commission submission requirements, including but not limited to:.
	• detailed installation drawing for each piece of Equipment;

	• detailed drawing showing the equipment mounting brackets and details of their installation to the mounting arm;
	• details related to the range of Equipment adjustments;
	• detailed electrical schematics;
	• all junction boxes and panels;
	• detailed equipment rack layout and interconnections drawings;
	• detailed communications layout;
	• power and communications cabling schedules, and
	• pavement installation details for in-pavement sensor installations.
698	During installation the Contactor shall maintain a red line version of the drawing package that is submitted to the Commission upon the completion of the installation.
699	Documentation shall include memos denoting changes or modification to requirements.
700	The Contractor shall submit detailed component level network drawings showing all WAN, LAN and VLAN connections, including connection to the PTC host system, SAP and the existing CSC/VPC system.
701	Contractor shall utilize a predefined range of IP addresses provided by the Commission. An IP schematic shall be submitted and Approved by Commission IT Security that shows all the IP addresses for all Contractor supplied Equipment on the network.
702	The Contractor shall submit detailed component level primary and secondary server configuration instructions, including storage device mirroring, backup devices and configuration, and network configuration and testing.
703	The Contractor shall submit detailed instructions on the installation of the operating system, database, third-party Software, and application Software on the servers.
704	All testing required to verify successful installation and operation shall also be documented.

4.13.4 As-Built Drawings/Documents

705	The Contractor shall update the latest drawings with red-lines as changes are incorporated during the installation process. At the completion of the installation of the Cashless Tolling System, the Contractor shall gather all red line drawings.
706	The red line drawings shall be verified and then incorporated into a final As-Built drawing package. This final As-Built package shall include installation drawings, shop drawings and sketches, and other drawing types that may have been used to install the Cashless Tolling System. The As-Built drawings shall include at a minimum power and data connections, installed

	equipment locations and electronic cabinet/panel layouts.
707	All other documentation used regarding the installation shall be also be finalized and submitted as part of the As-Built submittal.

V. CASHLESS TOLLING SYSTEM PROJECT REQUIREMENTS

5.1 Cashless Tolling System Project Management

The Contractor shall employ a Project Management System that is sufficiently detailed to enable the Commission to review and confirm that the Contractor has the necessary management, staff, and controls in place to meet the requirements of the Contract.

5.1.1 Program Management Plan

The Program Management Plan describes how the Contractor plans to implement and manage the Project, including staffing, scheduling and communication procedures for controlling all correspondence, submittals, and other communications between the Contractor and the Commission, and communications with the civil designer, civil contractors, third-party entities and existing contractors.

708	The Program Management Plan shall at a minimum include the following elements:
	• Project scope and key Deliverables;
	• a description of the management and organization of the program, including an organization chart, identification of Key Team Personnel, their responsibilities and percentage commitment to the Project, tasks leads for each functional area and location and identification of the resources to be used in fulfilling the requirements of the Contract;
	• Project team (Contractor, the Commission, Commission's Representatives and existing contractors) contact information;
	• a description of the Project planning, documentation and reporting methods to be utilized, both for use within the Contractor's staff and externally to the Commission and other entities;
	• a description of the process for communication, escalation and resolution of Project issues with the Commission;
	• meeting schedules for meetings with the Commission and other entities including the form of the meeting as part of the Communication Plan;
	• the Approved Project schedule;
	• a description of the process for reporting, updating and tracking the Project schedule and Project performance;
	• coordination process with the civil designers, civil contractors and management of the RFI process during the infrastructure design phase;
	• coordination process with the civil designers, civil contractors and management of the installation drawing review process;

	• approach to change management, consistent with Contract requirements, including a description of the process for documenting and submitting change requests, the Approval process and how the change management approach will be integrated into day-to-day Project management;
	• approach to document control, including Software (the Commission shall have the capability to download documents using this Software) and tools the Commission will use and have read-only access to via the Web;
	• approach to risk management;
	• approach to Quality Assurance and Quality Control;
	• documenting the invoice submission, invoice backup information, verification, and Approval process;
	• a section with all Approved Project forms including but not limited to, meeting agenda; meeting notes; action items tracking log; monthly progress report, and invoices.
	• an emergency contact list as described further below in requirement #723.
709	The Contractor shall identify the tools and products used to manage the Project and the internal controls instituted by the Contractor to guarantee successful delivery of the Project.
710	The Contractor shall develop and submit the Project Management Plan (PMP) to the Commission for review and Approval.
711	The Contractor shall develop and submit a Communications Plan to the Commission for review and Approval that addresses the following, including but not limited to:
	• all correspondence shall identify the originator and designated receiver.
	• Tracking of document versions and changes.
	• All invoices shall be submitted with accompanying backup information as required by the Contract and consistent with the Commission processes and invoicing and auditing policies. The Contractor shall work with the Commission to develop the appropriate invoice and back-up materials as a part of the PMP development.
	• All submittals shall be delivered as an enclosure to the Contractor's submittal letter. Each submittal letter shall be limited to a single subject or item. The Contractor's letter shall identify the Contract number, Contract name and subject of the submittal.
	• All items of correspondence, invoices, submittals and documentation shall contain the Contract number and the designated Contract name.
	• Process for validating that all comments provided by the Commission on Contractor deliverables are successfully addressed.

5.1.2 Contractor's Project Management Office

712	The Contractor shall establish a Project management office in the Harrisburg metropolitan area. All Project management activities shall be conducted from this office.

713	The Project manager shall be assigned to the Project management office and shall be one hundred percent (100) percent dedicated to the Cashless Tolling Project for the Implementation Phase of the Contract.

5.1.3 Staffing and Key Personnel

714	The Contractor is responsible for maintaining and assigning a sufficient number of competent and qualified professionals who speak fluent English to meet the requirements of the Contract.
715	The Contractor shall ensure Key Personnel are readily accessible to the Commission or their authorized representatives during the Contractor's performance of this Contract.
716	Contractor is required to provide staff at all times sufficient to meet the Project Requirements and Contract. The following are designated as Key Personnel for this Project and are subject to the Approval, replacement and removal requirements of the Commission for Key Personnel as set forth in the Contract:
	• Project Principal – responsible for the overall conduct and performance of the Project, oversight of the Project, the performance of the Project manager and the Commission's single point of contact for any escalated Project issues that cannot be resolved by the Project manager;
	• Project Manager – responsible for all day-to-day Work, the overall execution and delivery of the Project and the day-to-day Contractor contact person on the Project;
	• Deputy Project Manager – assists the Project manager in the execution and delivery of the Project and the day-to-day operations;
	• Technical Manager, Lane Systems – responsible for management of all In-lane Systems technology resources including selection of the lane solutions, subsystems, Software development and Systems maintenance.
	• Technology Manager, Host Systems – responsible for management of all technology resources related to the Host Systems, including Software development, on-going Hardware/Software maintenance, Equipment and Systems and information security as required to satisfy the Requirements of the Contract;
	• Installation Manager – responsible for the installation and Commissioning of the Cashless Tolling System;
	• Quality Assurance Manager – responsible for consistent quality throughout the Design, Development, Testing and Implementation of the Cashless Tolling System through good Quality Assurance and Quality Control practices, and
	• Test Manager – responsible for the overall planning and implementation of the Cashless Tolling System testing program.

5.1.4 Cooperation with Other Contractors and Providers

717	The Contractor shall cooperate to the fullest extent with the civil designers, civil contractors, the Commission and existing contractors to ensure the Cashless Tolling System Implementation and Maintenance Phase do not conflict with or cause any interruption in capability, service or safety issues to the traveling public or customers, or impede the Commission's ability to collect tolls.
718	The Contractor shall cooperate with the civil designers, civil contractors, existing contractors and external parties, as directed by the Commission, to support any activity related to the implementation of cashless tolling, including but not limited to:
	• the Commission employees;
	• the Commission Designated Representatives;
	• other third parties, as directed by the Commission;
	• law enforcement;
	• inspectors;
	• Auditors, and
	• all contractors.
719	The Contractor shall cooperate with and immediately notify the Commission of any customer complaints and system issues identified in the Commission lanes that come to Contractor's attention during the course of Implementation, Testing or Maintenance Phases.
720	The Contractor shall provide and maintain a current emergency contact list for the Commission's use at all times for handling emergencies and escalations. The emergency contact list shall name primary and secondary (multiple secondary contacts as applicable) points of contact for each anticipated emergency type. The emergency contact list shall name the Contractor's preferred points of contact, in order of precedence and shall include, at a minimum, the Contractor's primary Project manager, deputy Project manager, installation manager, technology manager, and other support staff. The purpose of the emergency contact list is to ensure the Contractor can be reached outside normal working hours to address urgent matters.

5.1.5 Monthly Report and Progress Meeting During the Implementation Phase

Monthly Project reports and progress meetings will enable the Commission and the Contractor to monitor the status, progress, and quality of the Work performed on the Project and to take proactive steps to ensure successful delivery of the Project.

721	The Contractor shall provide and maintain a schedule for monthly progress meetings (in addition to the weekly Design/installation meetings during the active Design/installation periods) at a location designated by the Commission. The meeting shall be scheduled no later than the 20th day of the following month.
722	No less than five (5) Business Days prior to the meeting, the Contractor shall submit a draft monthly progress report to the Commission for the period covering the previous reporting period. The Commission shall review and comment on the progress report prior to the meeting.

723	The Contractor shall obtain updated installation status prior to the monthly meeting and include such updates in the Project Implementation schedule which shall be submitted with the monthly progress report.
724	The format of the monthly progress report shall be agreed upon as one of the initial Project tasks upon Notice to Procede (NTP) and shall be incorporated by the Contractor into the Program Management Plan.
725	The monthly progress report that includes but is not limited to:
	• a summary outlining progress and status, and percentage of Work performed for each task as compared to planned activities in the Project Implementation schedule. Comments shall be included where appropriate. The summary shall also identify key milestones met and missed in the period;
	• an analysis of all critical path tasks, potential risks associated with the tasks and proposed contingency/work around plans to circumvent or mitigate delays to the Project;
	• identification of any Approved changes to Approved milestone dates and Approved Project Implementation schedule, clearly noting the details and identifying the Contract amendment;
	• a discussion of schedule compliance and an updated Project Implementation schedule showing current status against the baseline Approved Project Implementation schedule. Past due tasks shall be updated and actual dates shall be recorded for completed tasks;
	• an updated action items list that tracks the status of all outstanding action items, activities and issues that need decision/resolution;
	• an updated deliverables list showing submission dates, current version, current review status, responsible party and due date;
	• a payment request, if applicable. Payment requests must identify the payment milestone, number and dollar amount. Payments requests shall be made for completed and Approved milestone payments only;
	• a list of change requests (Contractor and Commission initiated) and their status;
	• the previous monthly final meeting minutes, and
	• a six (6) week look-ahead schedule.
726	No more than five (5) Business Days after the meeting, the Contractor shall submit the final monthly progress report and draft meeting minutes for the Commission's review and Approval.

5.1.6 Project Meetings

727	In addition to the monthly progress meeting, weekly or bi-weekly Project status meetings, as applicable and Approved by the Commission, and other regularly scheduled installation and ad-hoc Project meetings shall be required during the course of the Project to address specific deliverables, Work items, Maintenance procedures and issues as they arise.
728	The Contractor shall perform the following tasks related to all meetings, including but not limited to:

	• develop and coordinate the Project meeting schedule;
	• distribute notices of Project meetings in accordance with document control Requirements;
	• prepare the agenda in coordination with the Commission;
	• attend the meeting with all required staff in attendance;
	• prepare minutes of the meeting and forward them to the Commission within five (5) Business Days after the day of the meeting and
	• maintain an action item list for each type of meeting, identifying issues that need to be resolved at the Project level.

5.1.7 Project Schedule

The Project schedule is a comprehensive list of Project milestones, activities and Deliverables, with intended start and finish dates, including a detailed Work Breakdown Structure (WBS) that identifies Project tasks down to the Work package level and the activities required to complete the Work package Deliverables.

729	The Contractor shall provide and maintain a detailed Project Implementation schedule for the Project in Microsoft Project format (Project 2010 or above) that lists all Project activities and tasks for all Phases of the Project, including but not limited to:
	• Requirements;
	• Design;
	• development;
	• testing;
	• installation;
	• Transition, and
	• deployment of the Cashless Tolling System at the various facilities.
730	The Project Implementation schedule shall include coordination with civil contractor, existing contractors and the Commission and shall clearly document all interfacing tasks.
731	The Project Implementation schedule shall identify all milestones and tasks, starting with the NTP through the date of Acceptance and end of Warranty for each implementation location of the Project.
732	The Project Implementation schedule shall be resource loaded, and shall include all draft submissions and review cycles, and all tasks required of the Commission and other contractors with critical tasks.
733	The Project Implementation schedule shall identify all critical path tasks and shall be used to manage the Project.
734	The Project Implementation schedule shall include all tasks for the submission and approval of the final civil drawings identifying the locations of all toll equipment to be install in a toll zone within 60 days of NTP.
735	The Project Implementation schedule shall identify the anticipated Go-Live date of the 4th quarter of 2019.

736	The baseline for the Project Implementation schedule shall be submitted to the Commission for Approval within fifteen (15) Business Days after NTP.
737	The Contractor shall update the Project Implementation schedule on a monthly basis, as identified in the Requirements for the Monthly progress report.
738	The Contractor shall use the Project Implementation schedule as the basis for all subsequent schedules and updates throughout the duration of the Project.
739	The Contractor shall obtain Approval from the Commission for any and all changes to the baseline Project Implementation schedule and associated milestones in accordance with the Contract process for changes and amendments and are not considered Approved unless an amendment is executed through the Contract.

5.2 End of Contract Transition

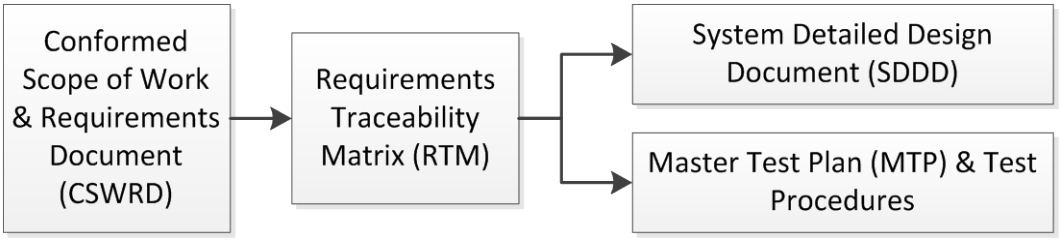
The Contractor acknowledges that the Services it provides under the terms of the Contract are vital to the successful operation of the System and that said Services shall be continued without interruption. Upon termination of the Contract, a successor (the Commission or a new service provider) may be responsible for providing these Services. The Contractor agrees to exercise its best efforts and cooperation to affect an orderly and efficient transition to a successor.

740	Upon the Commission's written notice, the Contractor shall furnish transition Services during the last ninety (90) days of the term of the Contract. The Contractor shall develop with the successor contractor or the Commission staff, a Contract Transition Plan describing the nature and extent of transition Services required.
741	The Contract Transition Plan and dates for transferring responsibilities for each division of Work shall be submitted within thirty (30) days of such notice. Upon completion of the Commission review, both parties will meet and resolve any additional requirements/differences.
742	The Contractor shall provide sufficient experienced lane and Software support personnel in each division of Work during the entire transition period to ensure that the quality of Services are maintained at the levels required by this Contract.
743	The Contractor shall provide sufficient staff to help the successor maintain the continuity and consistency of the Services required by the Contract. The Contractor shall allow the successor to conduct onsite interviews with the employees.
744	The Contractor shall provide the necessary Software and Systems support Services to assist the successor operator in setting up the systems, transfer of appropriate licenses and third-party Software, and transition of all host data required to sustain uninterrupted service.

5.3 Software Design and Development Requirements

The Commission expects the Contractor to propose a baseline product for the lane solution and the Cashless Toll Host System, and that some custom development will be required. To ensure the Design Requirements for the Cashless Tolling System are fully understood by the Commission and the Contractor, a series of Requirements and Design review steps are specified following a sequential Design

process or waterfall model. The Contractor shall work with the Commission and its representatives to produce a Conformed Scope of Work and Requirements Document (CSWRD). The CSWRD shall be the basis for the Contractor to produce a Requirements Traceability Matrix (RTM). The RTM allows for verification that the Requirements are addressed in the Design and documented in the System Detailed Design Document (SDDD) and traced to test procedures that validate the developed Cashless Tolling System meets the Contract Requirements. The RTM shall be the basis for all Design, development and testing efforts and documentation to be developed by the Contractor.



745	The Contractor shall establish and maintain an effective Software Design and development program along with a documented Software Development Life Cycle (SDLC) to ensure compliance with the Requirements of the Contract.
746	The Contractor shall employ effective techniques and methodologies to develop the System Requirements and Business Rules for the Project.
747	Prior to conducting any workshops, requirements reviews, focus group meetings and Design reviews, the Contractor shall develop the necessary documentation for the Commission review and submit such documentation ten (10) working days prior to such meetings.
748	The Contractor shall provide a Table of Contents for the Design document that identifies the required document Deliverables and any document templates that will be used to develop the documentation. Such documentation shall be tailored for the Project, and the CSWRD shall be used for developing such documentation.

5.3.1 System Requirements Review (SRR)

The Contractor shall conduct a series of System Requirements Review meetings with the Commission to outline how the Contract requirements will be met. The outcome of these meetings shall be a Requirements Traceability Matrix (RTM) that will be used to validate each Requirement against a Design item(s), Design Documentation and testing procedure(s).

749	The Contractor shall conduct a series of System requirements reviews with user groups to identify user needs.
750	The Contractor shall present lane logic and transaction framing rules of the baseline solution.
751	Contractor's existing screens and presentation formats shall be used to solicit user requirements and feedback.

752	During the System requirements review phase the Contractor can also present the Contractor's standard product to the Commission, and use the feedback obtained in the presentation in the development of the System Requirements Document (SRD).

5.3.2 Business Rules Development

753	The Contractor shall conduct Business Rules development workshops with the Commission to develop and document the Business Rules and operational policies for the In-lane Cashless Tolling Systems and the Cashless Toll Host System.
754	The Business Rules workshops can occur concurrent to the System requirements reviews.
755	The Contractor shall provide Business Rules utilized at other cashless tolling facilities; however, they shall be tailored to meet the Commission's requirements and shall comply with the Scope of Work.
756	The Contractor shall track the design, development and testing of the Business Rules through the RTM.

5.3.3 System Detailed Design Review

Based on the RTM and Business Rules documents, the Contractor will Design the Cashless Tolling System and submit a preliminary Design document for the Commission to review and provide comments. The Contractor will then conduct a series of Design meetings with the Commission to address the comments and to create the System Detailed Design Document (SDDD), defining how the System Design will meet the Contract Requirements. Upon the submittal of an updated SDDD another review cycle will take place.

757	The Business Rules document (BRD) and the RTM shall be used to develop the System Design and the SDDD.
758	The Contractor shall schedule Design meetings with the Commission to fully understand the Design Requirements.
759	The Contractor shall support a phased Design process to support the multi-year implementation of the Cashless Tolling System on the Commission facilities. The Design process shall accommodate for the changes in technology that is inevitable given the duration of the Project.
760	The Contractor shall demonstrate pre-production working products (such as, beta versions) during the Design review process, and stakeholders shall be walked through the workflow, utilizing screens and data flow diagrams.
761	The Contractor shall explain how the System Design meets the RTM, the Business Rules and the Contract requirements.
762	The Contractor shall conduct as many meetings and submission review cycles as deemed necessary by the Commission to address all Design issues to the Commission's satisfaction.

5.3.4 Reports Design Workshops

The Contractor will conduct a series of workshops with the Commission to facilitate the Design of the Cashless Tolling System reports. The existing reports are provided in *Attachment 9: Existing PTC Host Reports* and these shall be used as a basis for the workshops along with the applicable Contract requirements.

763	The Contractor shall employ an effective and productive methodology for Designing and finalizing the reports for the Project.
764	The reports Design process shall be iterative and the Contractor shall conduct multiple workshops with the Commission's stakeholders, and Contractor shall bring subject matter experts to the meeting.
765	Subject matter experts must provide a means for explaining each report, its intended purpose, columns, fields and components and its connection with other reconciling and validating reports.
766	Report templates from existing operational systems shall be submitted and changes to meet the PTC Cashless Tolling System requirements shall be noted. Sample reports shall have correct and accurate data and shall reconcile across other reports.
767	Upon receiving feedback from the stakeholder, the Contractor shall develop/modify the reports and resubmit the updated reports for review.
768	The modified and new reports shall be demonstrated to the Commission using accurate and reconciled data. Reports that are expected to reconcile to one another shall be demonstrated together.
769	The iterative series of workshops and demonstrations shall continue until baseline reports are Approved by the Commission.
770	The Approved baseline reports shall be used as the basis for the Design document.

5.3.5 Software Walkthrough

The intent of the Software walkthrough is to provide an overall status on the Contractor's Software development progress to ensure the Contractor is on track to deliver the Project on schedule and to obtain the Commission's feedback on the direction of the development prior to the full rollout of the Software.

771	The Contractor shall conduct a series of Software walkthroughs including product demonstrations to solicit input from the Commission during the development of the Cashless Tolling System.
772	Prior to the Software walkthrough, the Contractor shall develop and submit the use cases that will be demonstrated to the Commission for review and Approval. The walkthrough shall follow the process flow and emulate normal operations.
773	The product shall be demonstrated in a test environment that allows data to flow as it will in the final integrated System.

774	The Software walkthrough shall demonstrate to the Commission that the developed Software product meets the technical and functional Requirements of the Contract.
775	Comments and feedback provided during the Software walkthrough shall be documented and resolved by the Contractor and the resolution shall be Approved by the Commission.
776	The Contractor shall be responsible for identifying and correcting any Software issues or defects in its Design or product that impact the Contractor's ability to deliver the Cashless Tolling System that meets the Contract requirements. This shall apply to issues or defects found during or after Software walkthrough or in the subsequent testing and Implementation. Any such changes shall be Approved by the Commission in writing.

5.4 Documentation

The Contractor is required to provide various Hardware; Software; Requirements; Business Rules; Design; testing; installation, and Maintenance documentation that include Contractor-developed documentation and third-party documentation. All documentation provided under this Contract shall meet the requirements described below.

777	The Contractor shall provide and maintain an online, electronic document management system in a central location that is accessible to the Commission by username and password, to control all Project-related documents, submissions and drawings in accordance with the Commission ECO process as defined in *Attachment 13: ETC System Change Control Procedures V1.6 (or the latest Approved version per PTC)* for the term of the Contract.
778	The electronic document management system shall be indexed and searchable.
779	All Project documents submitted under this Contract shall be available to the Commission using the online, electronic document management system provided by the Contractor at all times.
780	The Contractor shall maintain a deliverable tracking list that accurately tracks all Contractor submissions; the Commission's comments review documents; resubmissions and final Approval.
781	Each document shall be properly titled, date updated, numbered by revision and version, and shall incorporate signature blocks for authorship and Approvals. The Contractor shall provide a logical indexing system for ease of access for the Commission to locate documents in the electronic document management system.
782	Updated submissions of the document shall also include the red-lined version showing all revisions to the document since the last submission.
783	The Contractor shall utilize acceptable standards agreed upon by the Contractor and the Commission when updating documents and submitting revisions.
784	All documentation submitted by the Contractor under this Contract shall be accurate and comply with Contract requirements. All Deliverables shall be submitted in accordance with the Approved Project schedule.

785	A Table of Contents, for all documentation that requires one, shall be submitted by the Contractor to the Commission for review and comment prior to the submission of the preliminary draft.
786	The Contractor shall submit a minimum of: a preliminary draft, a final draft and a one hundred (100) percent final to the Commission for review and comment. All final documents shall incorporate all the Commission's review comments to the Commission's satisfaction. Each subsequent submission of a Deliverable shall also include the Commission's comments review log with the resolution of each comment updated by the Contractor.
787	The Commission shall have the right to require additional interim drafts from the Contractor at no additional cost should the draft documentation submitted not be of adequate quality, have missing or incorrect information or if it does not satisfactorily address the Commission's review comments.
788	The Commission shall review and Approve all documents submitted under the Contract. For documents containing less than one hundred (100) pages, the Commission will review and provide comment on preliminary draft documents within ten (10) Business Days. For documents containing more than one hundred (100) pages, the Commission will review and provide comment on preliminary draft documents within fifteen (15) Business Days. The Commission will review and provide comment on all final draft and final documents within ten (10) Business Days. When multiple documents are submitted to the Commission simultaneously, or within one week of each other, the number of Business Days required for review shall be adjusted to reflect the overlapping submissions.
789	The Commission will provide the Contractor with written comments on all submitted documents, and the Contractor shall respond in writing to all comments. A meeting may be conducted to clarify and resolve any remaining questions and issues concerning the comments and responses provided. The Contractor shall prepare a revised version of the document for Approval by the Commission.
790	The Contractor shall submit the electronic version of all Contractor developed documentation for the Commission review and Approval. Acceptable electronic formats are Microsoft Office 2010 Suite (or higher), unsecured Portable Document Format (PDF) and professional CAD applications for Contractor-prepared documentation.
791	The Contractor shall update documentation as changes occur through the Implementation Phase (and the Maintenance Phase) and shall maintain a document submittals list on the electronic document management site identifying all versions of documents, the date submitted, the nature of changes and provide relevant updates to the Commission as they are published.
792	The documentation package for all submittals as applicable shall include all required electronic media to install, operate and maintain the System/Deliverable/document being supplied.

5.4.1 Requirements Traceability Matrix (RTM)

793	Upon completion of the Requirements and Business Rules review process the Contractor shall deliver a Requirements Traceability Matrix (RTM) that details all the technical and functional Requirements for the Cashless Tolling System.
794	The RTM shall build on the specifications documented in the CSWRD and shall capture all user needs identified during the Requirements Business Rules review process.
795	Upon Approval of the RTM, this document shall be the basis for functional verification Design, development and testing.
796	During the Design and development of the Software, the Contractor shall update the RTM to reflect any changes to the Requirements that have been Approved by the Commission.
797	During Design and testing, the RTM shall be used to verify the System compliance to the Contract requirements and test procedures.
798	All changes to the System requirements during the course of the Project shall be tracked through the RTM.
799	The RTM shall include:
	• listing and categorization of all functional requirements;
	• listing and categorization of all Software related technical requirements;
	• identification of the source of all requirements;
	• identification of the Design section of the SDDD that addresses the Requirement and
	• identification of the test procedure that addresses the Requirement.

5.4.2 Business Rules Document (BRD)

As an outcome of the Business Rules workshops and review meetings, the Contractor will provide a Business Rules Document.

800	The Contractor shall submit a Business Rules Document that includes but is not limited to:
	• detailed Business Rules for all aspects of the System, including policies and processes developed by the Contractor and Approved by the Commission;
	• detailed description of all System Configurable options, ranges and thresholds (Configurable within the System or Configurable by Authorized User) for each business rule (if applicable);
	• categorization of all Business Rules, providing indication for the source of the business rule;
	• cross-referencing of all Business Rules to the underlying Requirements and
	• System and operational impacts of each business rule.

5.4.3 System Detailed Design Document

801	The Contractor shall develop and submit a System Detailed Design Document (SDDD) that describes the Design specifications of all Hardware and Software provided as part of the Cashless Tolling System to meet the Approved Contract requirements. The SDDD shall demonstrate that the Contractor understands the functional, technical and performance requirements of the Cashless Tolling System and has the processes, Hardware and Software Design in place to provide a high-quality and reliable product that meets the requirements of the Contract.
802	The SDDD shall be clear, well-written and organized into volumes to manage the submission and review process.
803	The SDDD shall include the use of diagrams, figures and tables, and it shall apply to all environments, including primary and secondary production and testing environment.
804	The SDDD shall include but not be limited to:
	• System architecture, including overall System Design concept;
	• in-lane Equipment layout for each zone type,
	• lane layout electrical and logic diagrams;
	• toll equipment building equipment rack layout and interconnections;
	• data backup Systems Design, including sizing and processing calculations;
	• the Requirements for all peripheral device Interfaces and control;
	• server Design, including sizing and processing calculations;
	• storage system Design, including sizing and processing calculations;
	• network sizing and Design details including IP scheme and
	• space Requirements;
	• power Requirements;
	• degraded mode of operations and impacts of failures on System operations;
	• UPS sizing information detailing all Equipment on the UPS(s) and their total power Requirements including all Commission communications equipment regardless of purpose;
	• detailed database Design, schema and entity relationship modeling, including sizing and processing calculations;
	• high System availability Design, including Servers, storage, network, database and application;
	• Disaster Recovery Design, including Servers, storage, network, database, data resiliency and application;
	• Hardware dependencies and inter-dependencies;
	• detailed infrastructure Software Design,
	• detailed operating systems Design;
	• detailed primary and secondary locations rack and server placement Design;
	• detailed desktop computer Hardware configurations;

	• detailed desktop computer Software configurations;
	• detailed desktop peripherals configurations, including Requirements for all peripheral device Interfaces and control;
	• all internal System Interfaces;
	• all custom developed Software;
	• all Software provided by the Contractor or a third party;
	• Software dependencies and inter-dependencies;
	• data flow diagrams, state diagrams and data queues;
	• Module level descriptions and interaction among various Modules;
	• detailed description to the Module and/or process level for all of the functions according to the functional Requirements of the System;
	• lane logic and vehicle framing design and rules with illustrations;
	• degraded mode of operations and impacts of failures on System operations;
	• transaction audit and pre-processing;
	• transaction processing Design, including sizing and processing calculations;
	• detailed Interface specifications between all Software components;
	• Design of all System Interfaces (both sides of the Interface), including electronic Interface to the PTC host system, SAP and the existing CSC/VPC system.
	• formal and standard Interface Control Documents for documenting both sides of the Interface for all interfaces;
	• detailed data management Design and processes, including summarization, archiving and purging;
	• all user Interfaces (including reports and screen formats);
	• System data dictionaries;
	• application performance monitoring Design;
	• access/identity security methodology;
	• security access system layout and interconnections;
	• cabinet interconnection diagrams;
	• environmental specifications;
	• specification sheets for all Equipment;
	• complete Bill of Materials, including Hardware, Software and support/Maintenance agreements;
	• A logical division and an index of all contents within the SDDD.
805	Upon the completion of the Software development, and prior to transitioning the Cashless Tolling System, the Contractor shall submit the Final Updated SDDD that includes all changes/clarifications made during the Software development and testing phases.

5.4.4 Cashless Tolling System Installation Design Requirements Package

806	The Contractor shall prepare and submit the Cashless Tolling System Installation Design Requirements and Documentation package to the Commission for review in accordance with the Approved Project Schedule.
807	The Contractor shall secure the services of a fully qualified engineering design firm(s) for the purpose of providing electrical, mechanical, structural oversight, and documentation Approval for all installation drawings where applicable.
808	All drawings shall be sealed, stamped, and certified by a Licensed Engineer of the appropriate discipline valid in the State of Pennsylvania where applicable.
809	The Contractor shall develop a full size (24" by 36") set of drawings providing sufficient and accurate detail to install the System components.
810	Sealed, stamped, and certified drawings shall be provided for each site where Equipment shall be installed.
811	In addition, the drawing shall contain notes and other detail defining specific processes that cannot be graphically depicted. The notes shall also be used to delineate specifications, tolerances, special conditions, or any other factor required to install and integrate a fully functional System.
812	The drawings shall include but not be limited to the following:
	• lane geometry and dimensions of actual size and placement of all Cashless Tolling In-lane Equipment;
	• Equipment bracket mounting detail to the mounting point, including how the mounts will be brought on the platform for Maintenance, if applicable;
	• specifications and tolerances;
	• conduit and cable schedule showing all conduits, cables and wires used for the Cashless Toll Zones;
	• placement of in-road components;
	• size and depth of loop cuts;
	• loop tolerances (such as induction, resistance, impedance, Q factor, if applicable);
	• any specific infrastructure limitations (for example, proximity of rebar);
	• any specific requirement of how the loop cable is placed into the cuts;
	• all homeruns from loops;
	• any cable twist requirements for loop homeruns;
	• placement of overhead sensors;
	• details describing termination process for each termination;
	• lightning and surge suppression system;
	• a graphical diagram of the network connectivity and data flow;

	• detailed interconnection diagrams for all Systems;
	• detailed electrical schematics, and
	• detailed communications layout.

5.4.5 Cashless Toll Host System Installation Design and Documentation

813	The Contractor shall prepare and submit the Cashless Toll Host System Installation Design and Documentation package to the Commission for review in accordance with the Approved Project Schedule.
814	The Contractor shall develop a full size set of drawings (24" by 36") providing sufficient and accurate detail to install the System components.
815	The drawings shall include but not be limited to the following:
	• detailed interconnection diagrams for all Systems;
	• detailed electrical schematics;
	• detailed communications layout;
	• UPS sizing specifications;
	• Equipment rack layout, including power panels and connection to the UPS;
	• a detailed diagram of the network connectivity, including IP scheme;
	• server set-up and configuration;
	• other VToll Host System Hardware installation and connections and
	• floor loading calculations.
816	The Contractor shall provide the installation Requirements for the Equipment, including all related Plans and documents. The Contractor shall certify the installation Requirements provided as accurate and appropriate for its intended purpose, to the satisfaction and Approval of the Commission.
817	The Contractor shall submit Server room drawings that show the location of the Equipment racks for all Cashless Toll Host System Equipment at the primary facility. The layout of the Server components, storage devices and communication Equipment inside the cabinets shall be clearly presented with actual measurements shown.
818	The Contractor shall submit Server room drawings that show the location of the Equipment racks for all Cashless Toll Host System Equipment at the Disaster Recovery facility. The layout of the Server components, storage devices and communication Equipment inside the cabinets shall be clearly presented with actual measurements shown.
819	The Contractor shall develop and submit to the Commission a full size (24" by 36") set of drawings, providing sufficient and accurate detail to install the System components.
820	The Contractor shall submit UPS sizing information for the primary and Disaster Recovery facilities, detailing all Equipment on the UPS and their power specifications.

821	The Contractor shall submit detailed network drawings showing all WAN, LAN and VLAN connections, including all interface connections and IP addresses for all Equipment on the network.
822	The Contractor shall submit detailed Server configuration instructions, including the configuration of storage devices, backup devices and network connectivity.

5.4.6 Quality Assurance Plan

823	The Quality Assurance (QA) Plan that details the Contractor's QA Program shall be submitted to the Commission for review and Approval in accordance with the Approved Project Schedule.
824	The QA Plan shall include the Contractor's QA Program through planning, documentation; Design; Development; production; purchasing; testing; and installation of all Hardware and Software provided under this Contract.
825	The Quality Assurance Plan shall describe the quality assurance procedures and methodology for the Project, including but not limited to:
	• quality management and organizational structure;
	• System Design;
	• Software development and defect management;
	• installation including civil installation sign-off;
	• Equipment purchase, delivery and validation;
	• inspection and verification for in-process, final assembly, unit tests and System testing;
	• configuration management;
	• change management and change control process;
	• training and safety;
	• quality management documentation;
	• transition;
	• compliance to Contract Requirements;
	• quality review and verification and
	• reporting and metrics.

5.4.7 Software Development Plan (SDP)

826	The Contractor shall develop and submit a Software Development Plan (SDP) that includes but is not limited to:
	• documentation of the Software development approach to the application architecture, behavior, architecture, business processes, security and data structures;
	• approach System Design and Development given the Cashless Tolling System Project phasing;

	• development resources and responsibilities, such as Software developers, system engineers, security engineers, test engineers, Quality Assurance and control personnel, configuration management administrator, documentation specialists and Project management staff;
	• describe natural segregation of development areas or teams, such as development of user Interfaces, development of reports, development of the functionality and development of Interfaces;
	• Software development standards;
	• security standards;
	• Software development methodology, such as use cases, modeling and other development tools;
	• Software development language strategy, platforms and technologies related to both development and Software Maintenance;
	• description of the Software Development Life-Cycle and Maintenance;
	• approach to segregation of environments (development, testing and deployment) and the number of environments;
	• Maintenance of standard and baseline codes and management of major releases;
	• gap analysis of baseline code to Contractor Requirements;
	• development problem reporting, defect tracking and remediation;
	• code reviews and code development standards;
	• source control;
	• informal and internal testing methodology;
	• regression testing and security and vulnerability testing;
	• development and integration approach for the major functional modules;
	• Software Quality Control processes;
	• Software end-user documentation review and usability;
	• development documentation;
	• technical Software code documentation and standards for all code;
	• Software configuration and change management approach and standards;
	• samples of detailed Software documentation for both external and in-line documentation;
	• Software deployment approach, release management and validation and
	• detailed documentation of the development environment, including enough information that the environment could be completely replicated.

5.4.8 Master Test Plan (MTP)

827	The Contractor shall provide to the Commission, for review, comment and final Approval a Master Test Plan (MTP) that outlines the scope and testing concepts to be used to administrator each test identified in the Contract. The MTP shall document the methodology used to validate the Cashless Tolling System compliance to the requirements and demonstrate the Cashless Tolling System satisfies Technical, Functional and Performance Requirements.
828	The Approved Master Test Plan shall be used as the basis for the detailed test procedures that shall be submitted to Commission for review and Approval.
829	The Master Test Plan shall cover all aspects of the In-lane Cashless Tolling System and the Cashless Toll Host System testing from initial development through deployment, tolling point Acceptance and Project Acceptance, including but not limited to:
	• overall approach to testing;
	• approach to each informal and formal testing;
	• approach to creation of data set for each test;
	• Software test automation tools utilized for each test;
	• approach to validating all System requirements through the testing methodology;
	• describe the entry and exit criteria for each test;
	• document the severity and priority descriptions and levels for each test;
	• include a detailed schedule for each test identifying each test activity and resource;
	• describe the methodology for testing the performance requirements and sample size for each phase of testing;
	• describe the methodology for load testing;
	• describe the purpose; scope; duration; System resources, and human resources for all tests;
	• approach to validating all reporting Requirements;
	• approach to end-to-end testing, validation and Reconciliation;
	• approach to interface testing and compliance to standards,
	• document how defects will be triaged; tracked; reported; resolved, and retested, including tools used to document defects, and
	• a set of regression test procedures that will be exercised each time Software changes are made after the Approval of the FAT.
830	The Contractor shall provide detailed test procedures for the Commission's Approval for each test outlined in the Requirements and Approved MTP, including but not limited:
	• test logistics including test vehicles; drivers and test equipment;
	• test scenarios;
	• detailed test steps with expected outcomes;
	• test entry and exit criteria;

	• test preparation;
	• test data creation;
	• periodic status meetings;
	• all necessary human resources and
	• all necessary Hardware and Software.
831	The Commission's Approval of any aspect of testing shall not relieve the Contractor of its responsibility to meet the full requirements of the Contract.
832	The Contractor shall update the RTM linking every Requirement to a set of test cases to demonstrate the Requirement has been satisfied and which test satisfied the Requirement.

5.4.9 Maintenance Plan

The Contractor shall submit Maintenance Plans listed below that describes how the Contractor plans to facilitate the Commission in performing the Maintenance of the Cashless Tolling In-lane Systems, Cashless Toll Host System, and all Hardware at the toll equipment building in accordance with the requirements of the Contract. The Contractor shall have appropriate documentation available to all Maintenance and Software Support personnel, as required to perform their respective duties.

5.4.9.1 *System Maintenance Plan*

833	The System Maintenance Plan defines the approach to Services, staffing and resources to fulfill the System Maintenance requirements. The Plan shall include:
	• organizational structure, organizational chart and job descriptions and responsibilities; • detailed matrix of responsibilities (Commission and Contractor);
	• staffing plan;
	• approach to staffing and training;
	• detailed System monitoring requirements;
	• coverage and personnel locations;
	• third party System support agreements overview;
	• schedule of all System Maintenance activities;
	• all System Maintenance related communication methods;
	• Maintenance procedures, communication protocols and approval processes for System upgrades, scheduled Maintenance activities, change management and scheduled downtime;
	• Maintenance procedures and communications protocols for unscheduled downtime;
	• communication protocol for coordination with interoperable agencies and third-party entities;
	• communication protocol for coordination with the Commission's existing contractors;
	• trouble reporting processes;
	• escalation processes;

	• spare levels and reorder thresholds, Equipment and Software warranty tracking and return material processes;
	• monitoring the MOMS Dashboard;
	• monitoring Maintenance performance for compliance to performance requirements;
	• sample Maintenance reports;
	• Equipment replacement/refresh schedule;
	• upgrades to third-party Software and tools, and
	• process in place to meet Maintenance performance requirements.

5.4.9.2 *Software Maintenance and Warranty Plan*

834	Software Maintenance and Warranty Plan shall define the approach to Services, staffing and resources to fulfill the Software Maintenance and warranty requirements including but not limited to:
	• organizational structure, organizational chart and job descriptions and responsibilities; • detailed matrix of responsibilities (Commission and Contractor);
	• staffing plan;
	• approach to staffing and training;
	• approach to receiving and prioritizing Software defects (bugs);
	• reporting, categorization, prioritization, remediation and disposition of Software defects;
	• coverage and personnel locations;
	• all Software Maintenance related communication methods;
	• Maintenance procedures, communication protocols and approval processes for Software upgrades, Software releases, testing, scheduled Maintenance activities, change management and scheduled downtime;
	• Maintenance procedures and communications protocols for unscheduled downtime;
	• trouble reporting processes;
	• escalation processes;
	• sample Maintenance reports;
	• Software updates and testing to comply with E-ZPass Group specification changes, and third party interface changes;
	• Software and security updates, remediation and testing to be compliant to Commission Audit requirements, and
	• process in place to meet Maintenance performance requirements.

5.4.10 Disaster Recovery Plan

The Disaster Recovery Plan (DRP) shall be a comprehensive, documented statement of actions to be taken before, during and after a disaster to protect and recover the information technology data, assets and facilities of the Cashless Tolling System.

835	The Contractor shall develop and submit a Disaster Recovery Plan (DRP) and subsequent Disaster Recovery Procedures that describe the approach, as well as activities and procedures that take place in the event of a disaster for each element of the Cashless Tolling System.
836	The DRP shall document the Contractor's approach to recovering from a disaster, including but not limited to:
	• events that constitute a disaster and party responsible for declaration of a disaster;
	• assessment of disaster risks;
	• mitigation of disaster risks;
	• preparations in the event of a disaster;
	• disaster declaration and Disaster Recovery process to invoke;
	• organization chart illustrating Disaster Recovery team members, roles and responsibilities;
	• notification contact list, including contact information;
	• notification protocol;
	• sites and Equipment for Disaster Recovery, presented in a diagram format;
	• Disaster Recovery process initiation and completion checklist;
	• Software and data replication processes;
	• detailed logistical processes for activation of Disaster Recovery site and systems;
	• detailed technical processes for activation of Disaster Recovery site and systems;
	• detailed operational functions for activation of Disaster Recovery site and
	• detailed technical processes for reactivation of primary site (or moving to a new primary site if the original primary site is destroyed), Operations and Systems.
837	The DRP shall be tested no less than annually.
838	The DRP shall include a Business Continuity Plan (BCP) that details the Contractor's approach to accommodating the personnel, Equipment, Systems, network, applications and data components required to ensure the resumption and continuity of critical Cashless Tolling System processes.
839	The BCP, based on a Business Impact Analysis to assess the needs of the Commission business areas, shall include but not be limited to:
	• Recovery Point Objective (RPO) maximum acceptable amount of data loss for all critical Cashless Tolling System services after an unplanned data-loss incident, expressed as an amount of time;
	• Recovery Time Objective (RTO) maximum acceptable amount of time for restoring a critical Cashless Tolling System services and regaining access to data after an unplanned disruption;

	• Level of Service (LOS) the combination of throughput and functionality required to sustain Cashless Tolling System business Operations and
	• detailed description of how site and System security will be maintained to ensure continued compliance with security requirements.

5.4.11 Training Program and Plan

840	The Contractor shall develop and maintain a training plan, subject to Approval by the Commission.
841	The training plan shall describe the plan for training new personnel and shall outline the required operational/maintenance and system knowledge for each position to be gained from the training. For each position/user type, the plan shall include a training instructor guide, training manual and other materials to be used in training. The plan also shall include a schedule for follow-up training and continuing education for staff.
842	The training plan shall provide a plan for cross-training staff from other areas of operations or management for peak period, emergency or temporary assignments to provide for staff redundancy. The training plan also shall include the training schedule for regular staff training and continuing education/training.
843	The Contractor shall submit a training plan, in accordance with the Approved Project schedule, that describes the approach to training administrators, end users at different levels, Maintenance and support personnel, including but not limited to:
	• overall description of the training program;
	• training techniques;
	• training delivery schedule;
	• names and descriptions of each training class;
	• purpose of each training class;
	• who should attend the class;
	• qualification Requirements for trainer;
	• minimum qualifications for personnel attending the class;
	• duration of the class;
	• training materials, including syllabus, schedule, training goals, manuals, guides, other support materials and techniques to be used;
	• data preparation, such as test Accounts and test transactions;
	• required Equipment and
	• facility Requirements.
844	Courses shall be limited to a maximum of eight (8) hours per day.
845	The Contractor shall be responsible for maintaining a training database baseline and supporting data files that can be restored at the beginning of each training session.

5.4.12 Third Party Documentation

Third-Party documentation includes standard commercial documentation for third-party provided Hardware, Software, Services and materials.

846	The Contractor shall catalogue all third-party documentation and include the catalogue with the third-party document submissions.
847	The Contractor shall provide and maintain standard, commercially available, updated documentation for third-party provided Hardware, Software, Services and materials provided under this Contract. This set of third-party documentation shall be retained at the Commission offices for the duration of this Contract and upon termination of the Contract.
848	All updated documents shall show the revisions and also include a version of the clean document.
849	An electronic copy of all third-party COTS Hardware and Software installation and user manuals, with updates, shall be provided to the Commission. Acceptable electronic formats are Microsoft Office 2010 Suite or higher, unsecured Portable Document Format (PDF) and professional CAD applications.
850	Documentation shall include sufficient detail to describe the configuration of the Software as it was installed by the Contractor for the Cashless Tolling System. These should include any customization or modifications made to the Software or configurations specific to the Commission environments.
851	The Contractor shall provide all Hardware and Software installation and user manuals for custom-developed (non-COTS) third-party products and services in a printable electronic format.

5.4.12.1 *Third-Party Software Documentation*

852	The Contractor shall provide third-party Software documentation, including but not limited to:
	• all user manuals;
	• programmer's reference manuals;
	• warranty documentation;
	• installation manuals;
	• Interface documents;
	• Maintenance manuals and
	• any other information required to utilize the Software, such as the operating system, utilities, programming languages, application Software and communications Software.
853	The third-party Software documentation shall be provided by the Contractor electronically in a standard and organized format, with appropriate labels, tabs and cross references to allow the Commission to easily access and reference information on each Software component on the System.

5.4.12.2 *Third-Party Hardware Documentation*

854	The Contractor shall provide third-party Hardware documentation, including but not limited to:

	• all technical manuals;
	• operator's guides;
	• installation guides;
	• warranty documentation;
	• Hardware reference manuals;
	• available options and versions;
	• catalogs, components and
	• illustrated parts lists.
855	The Contractor shall provide all third-party Hardware documentation in a standard and organized format, with appropriate labels, tabs and cross references to allow the Commission to easily access and reference Hardware information on each Equipment component.
856	Third-party Hardware documentation shall include sufficient detail to describe the configuration of the Hardware as it was installed by the Contractor for the Cashless Tolling System.

5.5 Manual Requirements

Various manuals shall be provided as described below to allow the Commission to understand the operations of the Cashless Tolling In-lane System and Cashless Toll Host System. New manuals developed under this Contract that are not standard commercial catalogs or manuals, shall meet the Requirements set forth in this section.

857	The Contractor shall submit the Project manuals to the Commission for review and Approval in accordance with the Approved Project Schedule.
858	Whenever possible, all data shall be printed on 8-1/2" x 11" sheets; foldouts shall be 11" x 17".
859	Each manual shall include, but not be limited to:
	• a title sheet;
	• revision history;
	• Table of Contents;
	• list of illustrations (if applicable);
	• list of reference drawings and Exhibits (if applicable) and
	• a parts list (if applicable).
860	All manuals shall have a consistent look and feel and shall be professionally written and presented in clear and organized fashion.
861	All manuals prepared for the Commission under this Contract shall be produced, or editable, using Microsoft Office 2010 Suite (or higher). In addition, electronic copies of manuals shall be provided in unsecured Portable Document Format (PDF), if requested by the Commission.
862	Any special Software required to produce scalable typefaces or other graphs shall be provided by the Contractor as part of the documentation for the manuals.

5.5.1 Manual Submissions and Quantities

863	The Contractor shall submit electronic copies of all manuals listed below.
864	All manuals shall be maintained in electronic format in the Contractor's document management system for the term of the Contract.
865	The Contractor shall be responsible for producing a quantity of the manuals for the Contractor's use, sufficient to fulfill the Contractor's Requirements under the Contract.

5.5.2 Manuals to be Submitted

5.5.2.1 *Cashless Tolling Lane Maintenance Manual*

866	The Contractor shall submit Cashless Tolling Lane Maintenance Manual prepared for properly trained technical personnel assigned to the Maintenance of the Hardware and Software installed under this Contract on the Commission cashless tolling lanes. All manuals should be used for the training sessions. It shall document information required to support cashless tolling lane Maintenance and repair activities, including but not limited to:
	• lane Equipment layout for each Cashless Tolling Zone Type;
	• schematics and layouts of the Hardware in the lane cabinets, equipment racks and the interconnection diagrams;
	• parts lists required to service each piece of Hardware installed under this Contract;
	• general and detailed description and concepts of lane operations and functions;
	• detailed lane monitoring activities, specialty tools and schedule;
	• detailed Software monitoring activities and troubleshooting procedures;
	• Maintenance instructions to repair and replace parts and modules;
	• mechanical functions and installation of all Hardware;
	• listing of all event and error logs;
	• testing and basic troubleshooting procedures, and
	• preventive and corrective Maintenance procedures.
867	Standard service manuals for commercial products used for the Equipment shall be acceptable if they contain sufficient information to properly service the Equipment.
868	Large-size logic diagrams and mechanical assembly diagrams do not have to be reduced or incorporated into the manuals if these drawings are provided with the manuals and presented in a useable and durable form.
869	Photographic documentation of Equipment with appropriate labels and call-outs are satisfactory if they contain sufficient information to properly identify components, parts and features.

5.5.2.2 *Cashless Tolling System Monitoring Manual*

870	The Contractor shall submit the Cashless Tolling System Monitoring manual prepared for properly trained personnel assigned to monitoring the operations of the Cashless Tolling System including transmission of data and files to existing systems. All manuals should be used for the training sessions. It shall document information required to support Cashless Tolling System monitoring, including but not limited to:
	• all Dashboards, monitoring screens, notifications and data that needs to be checked;
	• listing of all jobs/process, their dependencies and their schedule;
	• listing of all folders and directories that need to be checked;
	• details related to the activity that needs to be checked;
	• frequency of the validations;
	• actions to take when results are not as expected;
	• notification and escalation process;
	• basic troubleshooting procedures, and
	• creation of work orders in MOMS.
871	Provide description about the tools and software for personnel to record the monitoring activity and instructions to use the tools/software.

5.5.2.3 *Cashless Toll Host System Administrators Manual*

872	The Contractor shall provide an Cashless Toll Host System Administration Manual that serves as a guide to the overall management and administration of the Cashless Toll Host System and shall include:
	• description of the programs and processes that need to be monitored to ensure that the System is operational;
	• procedures for validating tasks, processes and jobs have successfully completed, and errors and exceptions encountered;
	• procedures for validating the successful transfer and receipt of files for all interfaces, including PTC host system and the existing CSC/VPC system;
	• a listing of all the error codes, their meaning and potential associated problems shall be included in the manual, with a step by step guide to troubleshooting and correcting the problem;
	• all database Design, and database Maintenance activities required to keep the System operational shall also be clearly documented, including the scheduling of such activities;
	• detailed procedures for backup, archiving and purging data;
	• detailed schedule for all preventative Maintenance activities;
	• technical contact lists for Hardware and Software providers;
	• details and copies of all third-party system support agreements and

	• ad-hoc reporting tools and use of the tools to generate ad-hoc reports shall be documented, and
	• details of monitoring tools supplied by the Contractor to include but not limited to MOMS Dashboards and MOMS.

5.5.2.4 *Cashless Toll Host System User Manual*

The Contractor shall develop and provide a comprehensive set of system documentation and user manuals for the Cashless Toll Host System users. At a minimum, the documentation shall include all user and training manuals, a reports definitions and data flow diagrams.

873	The Contractor shall develop and submit Cashless Toll Host System User Manuals to be used by Commission staff to operate the Cashless Toll Host System and for training purposes.
874	The Contractor shall develop a separate manual for each job category that details all the processes, procedures and policies developed by the Contractor and Approved by the Commission required to fulfill the Requirements of each specific job description.
875	Each Cashless Toll Host System User Manual shall include but not be limited to:
	• screen images detailing the step-by-step activities needed to fulfill a specific functionality;
	• flowcharts to provide Commission staff a clear understanding of the workflow;
	• all screens, reports and data fields, clearly explained using sample formats applicable to the Cashless Toll Host System and
	• samples of all reports, included in the manual or as an attachment to the manual, with any specific instructions that may apply to a given report.

5.5.3 As-Built Documentation

Prior to the Commission Acceptance of each tolling location of the Project, As-Built documentation shall be provided that documents the final Cashless Tolling System Design and Implementation.

5.5.3.1 *System Detailed Design Document*

876	After the Approval of the Operational and Acceptance Test and prior to the Commission Acceptance of the Cashless Tolling System, for each tolling location of the Project, the Contractor shall submit the As-Built System Detailed Design Document (SDDD) that includes all Software and Hardware changes made during the System development, Implementation, and testing Phases.
877	The Contractor shall submit an electronic version of the As-built SDDD in a printable format Approved by the Commission.

5.5.3.2 *As-Built Drawings*

878	The Contractor shall provide to the Commission a complete set of As-Built drawings which shall be delivered in a readily printable in full and half size formats from the electronic format Approved by the Commission for all Equipment installed and furnished under this Contract.

879	As material changes are made to the System the Contractor will be required to update the As-built drawings to reflect the current status.
880	The sets shall include, but not be limited to:
	• all schematics;
	• logic diagrams;
	• layouts;
	• wiring diagrams;
	• interconnection diagrams;
	• all attachment hardware details;
	• installation diagrams;
	• cable schedule;
	• Interface details;
	• facility build-out details and
	• network diagrams, so as to provide a complete record of the as-built status of the Equipment.
881	All drawings for revisions to standard commercial assemblies or components for the Equipment shall be included in the As-Built drawing set.
882	All As-Built drawings shall contain a table of contents that shall include a listing of all drawings with headings for drawing number, drawing title, revisions number and date, and the type of material list, wiring diagram, wire list, specification control drawing, or similar categories.
883	The Contractor shall update the latest drawings with red lines as changes are incorporated during the installation process. At the completion of the installation, the Contractor shall gather all red line drawings.
884	The red line drawings shall be verified and incorporated into a final as-built drawing package. This final as-built package shall include all updated installation drawings, shop drawings and sketches, Plans and other drawing types that were used to install the Cashless Tolling System.
885	All other documentation used regarding the installation also shall be finalized and submitted as part of the as-built submittal.

5.6 Quality Assurance Program

The Contractor shall establish and maintain an effective Quality Assurance (QA) program on all aspects of the Cashless Tolling Project to ensure compliance with the Contract. This Quality Assurance Plan will detail the process and procedures instituted by the Contractor to ensure the QA program is in place.

886	The Contractor shall establish and maintain an effective Quality Assurance (QA) program that ensures adequate quality throughout all areas of Cashless Tolling Project Contract performance.

887	All supplies and Services under this Contract, whether manufactured or performed within the Contractor's facilities or at any other source, shall be controlled by the Contractor at all points necessary to ensure conformance to the requirements of the Contract.
888	Purchase, delivery, verification, testing and assembly of Equipment, Hardware and Software conducted within the Contractor's facilities and on-site shall be controlled completely by the Contractor.
889	Delivery, verification, testing and assembly of Servers and network Equipment conducted within the Contractor's facilities shall be controlled completely by the Contractor.
890	The QA program shall provide for the prevention and ready detection of discrepancies and for timely and positive corrective action.
891	The QA program shall include effective Quality Control of purchased materials and Subcontracted Work.
892	The Contractor shall make objective evidence of quality conformance readily available to the Commission, and the Commission shall have the right to review and verify the Contractor's compliance to the process.

5.6.1 Records

893	The Contractor shall maintain records or data essential to providing objective evidence of quality until the expiration of the Contract and these records shall be made available to the Commission upon request.
894	Quality-related records and data shall include but not be limited to:
	• inspection and test results;
	• records of Subcontractor QA programs;
	• cost records pertinent to Acceptance of nonconforming material;
	• inspection check-off of civil contractors work;
	• change request documentation;
	• Design reviews and walkthroughs and
	• results of internal and Contractor audits.
895	Records shall be maintained in a manner that shall allow for access and analysis of the status of the overall QA Program and in a format as defined in Section 5.4 Documentation.

5.6.2 Control of Purchase

896	The Contractor shall be responsible for ensuring that all supplies, components, developmental tools, assemblies, subassemblies, and Services procured from Subcontractors and vendors conform to the technical requirements and Contract.

897	The Contractor shall have a quality control process in place for tracking and handling non-conforming Equipment and products.
898	The Contractor's responsibility includes the establishment of procedures for the selection of qualified Suppliers. In selecting qualified Suppliers, the Contractor shall ensure that the Subcontractors and vendors control the quality of the supplies and Services provided.

5.6.3 Handling, Storage and Delivery

899	The Contractor shall document the approach to assembly of the Equipment, including the location where Equipment and Systems are assembled.
900	The Contractor's QA Program shall provide for adequate and documented handling, storage, preservation, packaging, and shipping instructions to protect the quality of products.
901	Commission assets, as defined by the Commission during the design process, shall be tracked and entered into the MOMS inventory and the cost and location of each asset shall be recorded.
902	All assets designated by the Commission shall have an inventory tag or labeling mechanism for the electronic data entry and tracking of Commission equipment by location and cost within the MOMS, subject to Approval by PTC during the design process. The tagging or labeling mechanism shall be readily and efficiently available to Authorized staff and automatically updated in MOMS.
903	Any unique or special requirements applicable to procured items shall be delineated in the procurement documents. All procurement documents shall be made available to the Commission upon request.

5.6.4 Inspection at Subcontractor-Vendor Facilities

904	The Commission reserves the right to inspect, at the source, supplies or services not fabricated or performed within the Contractor's facility.
905	The Commission's inspection shall not constitute Acceptance, nor shall it in any way replace the Contractor's inspection activity or relieve the Contractor of the responsibility to furnish an acceptable end product.

5.6.5 Access to/Inspection of Contractor's Facilities

906	Upon request, the Commission or its Designated Representative shall have access to the Contractor's facilities and personnel.
907	This access may be restricted to those portions of the facilities and personnel involved with or who are otherwise performing Work under this Contract.

908	Such access shall be for the purpose of inspecting the facilities; verifying progress; inspection of materials; Work-in-progress; or finished goods, or verifying test performance or results.
909	The Commission's inspection shall not constitute Acceptance or Approval, nor shall it in any way replace the Contractor's inspection activity or relieve the Contractor of the responsibility to furnish an acceptable end product.

5.7 Cashless Toll Host Training

The Contractor shall provide comprehensive training for all aspects of the Cashless Tolling System, including but not limited to the operations, system monitoring, problem detection and resolution, audit, and Maintenance of the Cashless Tolling System. The training program will recognize and incorporate the plan for the Commission to perform Level 1 maintenance (as defined in Section *VII: Maintenance and Software Services)* of the Cashless Toll Host System. As such Commission technical staff will be fully trained to successfully coordinate all maintenance activities with the Contractor and to perform Level 1 Cashless Toll Host System maintenance.

5.7.1 Overview of Training Program

910	The Contractor shall be solely responsible for supplying all items necessary, including but not limited to training documentation, Software, Hardware and any other Equipment required to complete the delivery of the training program.
911	The Contractor's program shall include but not be limited to instruction, models, manuals, diagrams and component manuals and catalogs as required.
912	Where practical and useful, the Contractor's training shall be hands on and use actual Cashless Toll Host System Software in the training environment.
913	The Contractor shall produce all training materials and manuals of the latest documentation in electronic form to be used and printed for future training sessions.
914	The Contractor shall record training sessions to allow the Commission employees to remotely attend training sessions using WebEx or other online tool.
915	The Contractor shall ensure the Commission or their representatives have the right to attend any training sessions and to make video and audio recordings of training sessions and copies of all training program materials for their use in training new employees.
916	The Contractor shall obtain releases from all employees/Subcontractors to allow unlimited, royalty free use and copies of personal identity information (PII) compliant recordings and provide the same to the Commission upon request.

5.7.2 Training Requirements

917	The Contractor shall provide the following training courses for the Commission's personnel, including but not limited to the provision of all training manuals (including Contractor-provided manuals or relevant portions thereof), guides, training aids, as well as student and instructor work books accompanying the courses listed in the sections below.
918	The Commission may require additional courses be offered or additional personnel be provided training. The Contractor shall accommodate these requests to the extent possible with on-site personnel and documentation that is readily available.
919	Lane level training shall include an overview of generation of subsystem events and creation of transaction data and their flow through the System.
920	All Cashless Toll Host System training shall include a review and description of each of the appropriate Cashless Tolling System processes and procedures with actual Cashless Toll Host System Software. All students shall have their own workstation and interact directly with the training environment.

5.7.2.1 *System Operation Overview*

921	The Contractor shall provide a System operation overview training course for the Commission's management personnel who require a general understanding of all aspects of the operation, including but not limited to personnel from senior management, procurement, information technology, marketing and public information.
922	The system operations training shall include an overview of all aspects of the Cashless Tolling In-lane System and Cashless Toll Host System including DVAS, MOMS, cashless tolling operations, interface to the PTC host system, existing CSC/VPC system, System Maintenance, network, and any other operational area of the Cashless Tolling System.
923	System Operation Overview training will be conducted in one session with a minimum class size of ten (10) people, for a minimum of eight (8) hours.

5.7.2.2 *Audit and Reconciliation and Cashless Toll Host System Operations*

924	The Contractor shall provide an audit and reconciliation training course for the Commission's auditing staff to understand all aspects of the operation, particularly those related to reconciliation, audit and management.
925	Course shall include training all personnel who require a detailed understanding of the operations of the Cashless Toll System and how to access and view information and reports from the System on items such as status, alarms, performance, transactions and revenue.
926	Audit and reconciliation training will be conducted in one (1) session with a minimum class size of five (5) people, for a minimum of four (4) hours.

5.7.2.3 *System Monitoring Staff Training Program*

927	The Contractor shall ensure the System monitoring staff (PTC Operations Group) are properly trained in the requirements of monitoring the Cashless Tolling System and its uninterrupted operations.
928	Training on the Cashless Toll Host System shall focus on the Commission performing Level 1 Maintenance.
929	The Contractor shall provide a minimum of one (1) weeks of classroom and on-the-job training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned monitoring duties.
930	The Contractor shall provide documentation this initial training has been successfully completed.
931	The Contractor shall provide various training programs that include but are not limited to:
	• an in depth explanation of the Cashless Tolling Operations, including all Interfaces, file/data transfers and interconnections;
	• functions of the monitoring and tools used to manage monitoring tasks;
	• functions of the MOMS;
	• Cashless Toll Host System logs, error logs and processing of exceptions;
	• system dataflow and workflow queues;
	• explanation of the Dashboard data and analysis;
	• special use and monitoring tools and
	• queries and reports.
932	All System monitoring personnel shall attend the training sessions. The Commission's technical staff also shall attend all training sessions.
933	The Contractor shall keep accurate training records on all Maintenance and Software Support Services personnel. The Commission shall be permitted to review and verify Maintenance and Software Support Services personnel qualifications and training records at any time. Evidence of completion of training by Contractor personnel shall be provided to the Commission upon request.

5.7.2.4 *Cashless Toll Host System Administration*

934	The Contractor shall provide a System Users training course for all personnel who require a detailed understanding of the management, troubleshooting and administration of the interfaces, Software, database, applications, configurations and architecture of the Cashless Toll Host System.

935	Cashless Toll Host System Administration training will be conducted in one (1) session with a minimum class size of five (5) people, for a minimum of eight (8) hours and on-the-job training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned administration duties.

5.7.3 Training Facilities

936	The Contractor shall conduct training at the classroom facilities at the Commission administrative building for all training and at designated locations identified by the Commission. Following review of Contractor's Training Plan, the Commission will confirm that it has the requisite space to accommodate the level of effort and physical requirements for each training session.

5.7.4 Scheduling and Preparation for Training

937	It shall be the Contractor's responsibility to provide sufficient notice to the Commission on the types of training it will provide and the timing for each training session. The Commission will identify a list of participants that Contractor shall notify to schedule their participation in the training.
938	The Contractor shall perform all scheduling activities and shall make every attempt necessary to accommodate the maximum number of persons for each training session given scheduling conflicts. Contractor shall provide sufficient notice to allow participants a reasonable lead time.
939	The Contractor shall notify the Commission of the dates or range of dates it would like to hold a training session at the Commission offices and shall coordinate with the Commission Information Technology (IT) office and Administrative Services staff to arrange the proper classroom setting and computer Hardware and Software are installed and the space configured for each training session.

5.7.5 Training Materials

940	Draft copies of all training materials shall be submitted to the Commission for review, comment and Approval, prior to final printing of quantities required for training.
941	The Commission shall have the right to require additional interim drafts at no additional cost should draft training materials submitted not be of adequate quality or have missing or incorrect information.
942	For each course described in the section above, Contractor shall provide the materials listed below.

5.7.5.1 *Instructor Guides*

943	The Contractor shall provide an instructor guide for each training course. The guide shall include the following elements:
	• course agenda;
	• course objective;
	• procedures for managing training session;
	• resource and facilities required, including work stations, power and communications requirements;
	• detailed lesson plans;
	• a description of training aids and items to aid in on the job performance (e.g., where applicable, pocket guides or reference sheets);
	• test to be administered to assure satisfactory completion;
	• instructions for using any audio-visual support Equipment or materials and
	• student survey to obtain feedback on the training sessions and the training materials.

5.7.5.2 *Training Aids*

944	The Contractor shall provide training aids such as mock-ups, scale models, overhead displays, video demonstrations, and simulations as are necessary to successfully complete the course agenda and meet the course objective.
945	The Contractor shall provide users a way to access training documents, aids and tips in an online, electronic format.

5.7.5.3 *Student Workbook*

946	For each course, the Contractor shall provide a student workbook, including but not limited to:
	• course agenda;
	• course objectives;
	• schedule of sessions;
	• copies of all overheads and visuals and
	• lesson outlines and summaries.
947	Materials such as operations and user manuals may be used to supplement the material provided in the student workbook.
948	To the extent that the user manuals (and training aids) are appropriately detailed and fit for training purposes they shall be used for training. If the Commission deems they are not sufficiently detail then supplementary training material shall be provided.
949	If such material is used appropriate cross-references shall be included in the Student Workbook so as to identify the complete set of training materials provided to the student.

5.7.6 Training Room Set-up and Software Installation

950	Contractor shall be responsible for loading any special Software required on the classroom computers (provided by the Contractor).
951	It is the Contractor's responsibility to ensure that the Software is operating as expected on each of the classroom computers.
952	It is also the Contractor‘s responsibility to ensure that appropriate communications are in place.

VI. CASHLESS TOLLING SYSTEM TESTING REQUIREMENTS

6.1 Cashless Tolling System Testing Concept

The Commission has employed a phased approach to deploying cashless tolling on the Commission toll facilities. Given the extended duration of the Project, and the potential differences in the various In-lane System solutions, the Contractor shall conduct the following tests.

953	Various tests (outlined for reference immediately below and with detailed Requirements in subsequent sections) shall be prepared and conducted by the Contractor, including but not limited to:
	• factory acceptance test (FAT)
	• onsite first installation test (OFIT) at baseline tolling points;
	• installation and Commissioning test at baseline tolling points;
	• Operational and Acceptance test at baseline tolling points, and
	•

6.1.1 General

The Requirements described in this section detail the labor, materials, facility, and support Services necessary to test the In-lane Cashless Tolling System and the Cashless Toll Host System and its interface to the PTC host system, the existing CSC/VPC system and SAP.

The Contractor shall prepare and conduct tests that validate adherence to the Requirements that guided its Design and development, compliance to Approved Design and Business Rules and demonstrate the Cashless Tolling System functionality.

954	The Contractor shall be responsible for all aspects of testing performed as part of the Contract and to provide all necessary resources and facilities to conduct all tests including but not limited to:
	• test support personnel;
	• varying vehicle types and drivers;
	• test facilities;
	• test equipment, tools and safety devices;
	• test schedule and test sequence;
	• coordination with existing contractors;
	• coordination of lane closures and
	• conducting the test.

955	The Contractor shall to the extent possible, develop and use specialized automated testing Software to, including but not limited to:
	• create test scripts;
	• control the automated testing;
	• exercise all conditions, configurations and scenarios;
	• conduct performance testing;
	• conduct security testing;
	• conduct regression testing;
	• compare actual test outcomes to expected outcomes;
	• test reporting;
	• conduct load testing;
	• conduct user Interface testing;
	• conduct stress testing;
	• WAN traffic testing;
	• conduct sustained operational testing and
	• conduct sustained burn-in testing.
956	The Contractor shall provide a defect tracking system, accessible by the Commission, to document and track all defects identified as part of Cashless Tolling System testing and any subsequent actions taken to correct and retest those defects.
957	The defect tracking system shall be capable of the following, including but not limited to:
	• rating (severity) defects;
	• categorizing defects;
	• prioritizing defects;
	• logging the date/time the defect was reported;
	• subsystems and test cases impacted by the defect;
	• the user who reported the defect;
	• the erroneous behavior;
	• the details on how to reproduce the defect;
	• the developers who worked on the defect and corrective action taken;
	• date the defect was corrected and formally re-tested;
	• life-cycle tracking and
	• reporting.

6.1.2 Testing Sequence and Logistics

958	The Contractor shall obtain Approval from the Commission and shall have met the entry conditions prior to start of each test, including but not limited to:
	• Approval of all predecessor tests;
	• Approved test procedures for each individual test;
	• Approved test schedule;
	• successful closeout of all outstanding pre-test issues;
	• successful dry run testing with results provided to the Commission;
	• submittal of the latest Approved version of the RTM showing test validation against the requirements and
	• confirmation that both site and System are ready for testing.
959	After the completion of each test, the Contractor shall submit for the Commission's review and Approval a test report that documents the results of the test.
960	The test report shall address the following, including but not limited to:
	• the test summary;
	• the results of the test;
	• any anomalies and issues identified;
	• the corrective action/resolution of each item;
	• the test data;
	• calculations and backup data supporting compliance to requirements;
	• comments provided by the Commission and
	• the results of any re-tests necessary to successfully complete each testing phase
961	The Commission shall participate in the testing and witness each test. The Commission shall have full access to the test data and results of the test. Test data and results shall be stored on Commission QA/Test Servers.
962	Testing will not be considered complete by Commission until all anomalies and "punch-list" items are closed-out, and the final test report is Approved by the Commission.
963	Testing shall occur per requirement #956, subject to Commission's Approval of the final Master Test Plan.

6.2 Factory Acceptance Test (FAT)

964	The factory acceptance test (FAT) shall be conducted by the Contractor at the Contractor's facility in actual lanes with the complete test Cashless Tolling System in accordance with the Approved MTP described in Section 5.4.8 Master Test Plan (MTP), detailed testing procedures and Project schedule. The FAT test site shall remain available through throughout the term of the

	Contract for testing and validating changes, fixes and enhancements to the Cashless Tolling Hardware and Software.
965	The test configuration shall be representative of the Contractor's cashless tolling solutions.
966	The FAT shall be conducted by the Contractor to verify that all functional elements of the Cashless Tolling System are in conformance with the Contract Requirements.
967	Upon the successful completion of the FAT exit criteria and Approval of the FAT by the Commission, the Contractor shall be given the authorization to move forward to the On-site First Installation Test.
968	The FAT shall validate that the Cashless Tolling System Hardware meets the Requirements of the Contract including but not limited to:
	• 72 hour burn-in testing for customized and assembled hardware and
	• certification of hardware compliance to environmental requirements.
969	The FAT shall validate that the Cashless Tolling In-lane System meets the Requirements of the Contract including but not limited to:
	• accurate assignment and proper framing of each vehicle through various traffic conditions and test scenarios;
	• accurate capture of images and association of transponders and images to the correct vehicles;
	• compliance to accuracy requirements;
	• all exception processing requirements;
	• correct application of Business Rules;
	• degraded mode scenarios;
	• all device failure conditions;
	• rush-hour traffic scenarios;
	• redundancy;
	• mobile enforcement requirements (if option is exercised);
	• DVAS capabilities;
	• throughput and load testing using simulated data;
	• interface to the facility server (if provided) and/or Cashless Toll Host System, and
	• transaction and image reconciliation.
970	The FAT shall validate that the Cashless Toll Host System meets the Requirements of the Contract including but not limited to:
	• user interface;
	• Dashboards;
	• Cashless Toll Host functions;

	• MOMS;
	• transaction audit;
	• correct application of Business Rules;
	• system performance;
	• reporting;
	• redundancy;
	• system loading;
	• compliance of Cashless Toll Host System interface to Approved ICDs;
	• OCR/ALPR (if the option to implement OCR/ALPR is exercised), and
	• importing and reporting of existing detailed and summarized transaction data from the existing PTC Toll Host.

6.3 Onsite First Installation Test (OFIT)

971	The OFIT shall be conducted by the Contractor at the on-site locations identified by the Commission that are representative of the two gantry concepts; the overhead structures and the toll gantries in accordance with the Approved MTP, detailed testing procedures and Project schedule.
972	The OFIT shall verify the full functionality of the Contractor's Approved solution and its compliance with the Contract requirements and the Approved Design in a controlled, onsite environment using transactions created during live traffic operations and when lanes are closed to traffic. During OFIT testing the system shall be open to live traffic in a test environment and not collecting tolls.
973	For OFIT the interface to the Cashless Toll Host System and the image server(s) shall be in the test environment.
974	The testing shall not interfere with the existing system or impact lane operations.
975	Before the commencement of the OFIT, all Equipment and Software that are required under the Contract shall be in place, in a production environment and configured for revenue operations. The interfaces to the PTC host system and the existing CSC/VPC system shall be connected to the respective test environments as Approved by the Commission.
976	In order to test the full functionality of the MOMS and System Monitoring during OFIT, all Equipment shall be entered into the System prior to the start of OFIT and the MOMS shall be configured for cashless tolling operations.
977	The Contractor shall test the vehicle throughput and speed requirements and generate the required number of transactions to prove the System can process transactions accurately and meet the performance requirements.
978	Performance requirements shall be verified using Approved sample size.

979	The OFIT shall validate that the Cashless Tolling In-lane System meets the Requirements of the Contract including but not limited to:
	• operations of in-lane Equipment and their ability to report failures to the MOMS including the UPS;
	• multi-lane multi-vehicle traffic conditions such as rush-hour traffic (bumper to bumper), vehicle straddling/changing lanes/merging;
	• accurate assignment and proper framing of each vehicle;
	• accurate capture and correct association of transponders and images to the correct vehicle;
	• transaction processing during equipment failures, and degraded modes of operation;
	• performance requirements using live traffic and controlled vehicles;
	• Redundancy as defined in this Scope Of Work;
	• receive and process TSL, VEL (if exercised) and toll rate schedules (if applicable);
	• DVAS functionality;
	• E-ZPass Group interoperability using interoperable test accounts;
	• lane Business Rules and
	• interface to the Cashless Toll Host System and the existing CSC/VPC system.
980	An Audit of the lanes shall be conducted using live (not simulated) in-lane traffic to verify that the Cashless Tolling System is processing vehicles accurately and transactions can be reconciled in the System using the audit tools Approved by the Commission.
981	The OFIT shall validate that the Cashless Toll Host System meets the Requirements of the Contract including but not limited to:
	• functionality of the Cashless Tolling and MOMS Dashboards shall be verified as it applies to transactions, alarm and failure monitoring;
	• all failure conditions;
	• user interfaces and toll collection management functions;
	• Cashless Toll Host Business Rules;
	• reconciliation of transactions and revenue;
	• Cashless Toll Host reports;
	• Ad-hoc reporting capability;
	• accuracy of performance reports;
	• interface to the facility server (if applicable);
	• interface to the PTC host system, SAP and the existing CSC/VPC system including reconciliation;
	• conformance with performance, load and stress test requirements;
	• security requirements;
	• archival and purging requirements;

	• MOMS asset management; failure notification; work order tracking and performance reporting;
	• Cashless Toll Host System redundancy requirements, and
	• Cashless Toll Host System data resiliency requirements.
982	As part of the OFIT, an end to end testing shall be conducted that validates the following functionality, including but not limited to:
	• System's ability to process and post transactions to the Cashless Toll Host System and on to the existing CSC/VPC system, and
	• The successful transfer of images from the In-lane Systems to the image server(s) and on to the existing CSC/VPC system;

6.4 Installation and Commissioning Test

983	The Installation and Commissioning test shall be conducted by the Contractor on each lane as a part of the Contractor's Cashless Tolling System installation in accordance with the Approved MTP, detailed testing procedures and Project schedule.
984	The Installation and Commissioning test shall validate the functionality and operational status of the lanes including installation and configuration of all Equipment and Software. The lane operations shall be verified end to end upon the completion of the installation checkout prior to opening the cashless tolling lanes for revenue collection.
985	During the Installation and Commissioning test every piece of in-lane Equipment and its interface to the zone controller shall be verified to be fully operational. The zone controller, its interface to the Cashless Toll Host System and the transmission of images to the existing CSC/VPC system via the image server(s) shall be validated to ensure that the interfaces are in place and the Cashless Tolling System is ready for revenue collection.
986	A Commissioning test shall be conducted on the Cashless Toll Host System and shall include the image server(s) and the interfaces to the existing CSC/VPC system and the PTC host system.

6.5 Cashless Tolling System Operational and Acceptance Test

987	The Cashless Tolling System Operational and Acceptance test shall be conducted by the Contractor at each Cashless Tolling plaza location of the Cashless Tolling Project in accordance with the Approved MTP, detailed testing procedures and Project schedule.
988	The Cashless Tolling System Operational and Acceptance Test shall be conducted for each Cashless Tolling implementation upon authorization by the Commission to commence such testing. The Cashless Tolling System shall be observed in live revenue operations by the Contractor and the Commission for a minimum of four (4) calendar months.

989	The objective of the Cashless Tolling System Operational and Acceptance Test is to ensure that the Cashless Tolling System Software and Hardware functions over the test period with limited manual intervention in live operations. It is intended to confirm that the Cashless Tolling System and the network are sized and configured correctly and data is processed without interruption.
990	The Cashless Tolling System Operational and Acceptance Test shall validate the interface of the Cashless Tolling System to the PTC host system and the existing CSC/VPC system and reconcile the transactions and images end to end.
991	The Cashless Tolling System Operational and Acceptance Test shall validate the operation and accuracy of the Cashless Tolling System common to the Commonwealth of Pennsylvania.
992	During the test period, System accuracy, performance of the system and operations shall be validated including:
	• all System accuracy requirements specified in the Contract using representative sample size for each facility under test;
	• all maintenance performance requirements;
	• all system performance requirements;
	• a two hour vehicle audit during AM and PM peak hours for a total of four (4) hours on each lane at each tolling point that is part of the Cashless Tolling location in test;
	• transaction processing in accordance with Commission Business Rules;
	• correct classification of vehicles and assignment of toll and
	• monitoring of all interfaces for the accurate transfer and processing of all records.
993	System reliability and auditability shall be verified manually and through tools and reports provided in the System.
994	Dashboards and reports shall be verified daily for accuracy and reconciled to operations and interface files. Queries and detailed reports shall be generated to validate the daily, weekly, monthly, yearly and comparative reports and compared to reports.
995	The alarms displayed on the MOMS and all interface status notification shall be verified to be accurate.
996	Failure of the Cashless Tolling System to meet a performance requirement shall result in the restart of that particular test until such time the accuracy requirements are met.
997	The Cashless Tolling System Operational and Acceptance Test shall be repeated until the Commission is satisfied that the Cashless Tolling System meets the Contract requirements as set forth in the Contract at each tolling point.
998	The Cashless Tolling System Operational and Acceptance Test shall be conducted on the baseline tolling points (Findlay/Southern Beltway) upon authorization by the Commission to commence such testing. The Cashless Tolling System shall be observed in live revenue operations by the Contractor and the Commission for a minimum of two (2) monthly audit cycles.

6.5.1 Cashless Tolling System Acceptance

999	Upon the successful completion of Operational and Acceptance Test for the Cashless Tolling System for each implementation of the Cashless Tolling Project, the closure of all punch-list items and completion and submission of all Contract required documents as set forth in the Contract, the Contractor shall be given the Acceptance for the Cashless Tolling System for each Cashless Tolling implementation.

VII. MAINTENANCE AND SOFTWARE SERVICES

The Contractor shall provide all Maintenance activities associated with the Cashless Tolling System Maintenance and Software Support Services throughout the term of the Contract as further set forth in this Scope of Work. The requirements described in this section detail the Hardware Maintenance and Software and Administrative Support Services for the Cashless Tolling System including any existing Equipment integrated into the Contractor's solution. The tiered Maintenance levels described below and detailed in *Attachment 11: Maintenance Responsibility Matrix* will become effective upon completion of the Warranty period (Year 1 Maintenance). Cashless Toll Host System Maintenance will be performed and provided by Commission personnel as detailed below.

The Contractor shall provide Maintenance and Software Support Services for:

1. All Year 1 Maintenance (Warranty Year) Work for the entire Cashless Tolling System;
2. All subsequent years Cashless Tolling In-Lane Systems and LAN Maintenance and monitoring and
3. All subsequent years Cashless Toll Host System Software, Server and Database Administration defined below.

The Commission will provide Maintenance and Support Services for:

1. Network Maintenance Services for the Wide Area Network (WAN) and
2. Onsite Monitoring for the Cashless Toll Host System, exclusive of those Services defined as Contractor Level 2 Maintenance.

Maintenance for the Cashless Tolling In-Lane Systems and Toll Host Systems shall be the responsibility of the Contractor staff, including all the Maintenance Levels described below. For the Cashless Toll Host System, responsibilities by Maintenance Level are dependent on the scope. Onsite monitoring of the Cashless Toll Host System will be performed by Commission personnel 24x7. The Maintenance concept for preventive; pervasive; corrective; security and emergency Maintenance for the **Cashless Toll Host System** is defined by the levels listed below.

Maintenance Level 1: This level of maintenance includes onsite monitoring of system logs and Cashless Toll Host System maintenance alarms; confirmation of file transmissions; confirmation of system backups, and deploying third-party security software updates that can be handled either solely by Commission technical staff or at the direction of remote Contractor personnel. The responsibility for this level of maintenance will be performed 24X7 and staffing responsibility depending on the physical location of the Cashless Toll Host System as defined below:

Cashless Toll Host Location	Responsibility
PTC Data Center	Commission
Off-Site or Cloud based	Contractor

Maintenance Level 2: This level of maintenance is performed by the Contractor and includes any Cashless Toll Host System activities that can be executed and completed remotely by the Contractor

including those maintenance tasks escalated to the Contractor from Commission Level 1 services. Examples include Database maintenance and Software correction that can be performed remotely by the Contractor in coordination with the Commission. This level could potentially involve each of the types of Maintenance, including pervasive and corrective Maintenance. Contractor shall notify the Commission prior to performing any Level 2 Maintenance corrective activities or any activities that are outside of normal monitoring, such as process resets or System reboots. Level 2 Maintenance also includes preventive maintenance and security findings remediation.

Maintenance Level 3: This level of Maintenance is performed by the Contractor and includes any Cashless Tolling Host Maintenance Services that require Contractor presence onsite, for example re-configuration of the Cashless Toll Host System.

7.1 Cashless Tolling System Warranty Program

1000	The Contractor shall be responsible for the implementation and administration of a Warranty Program for all Hardware, Contractor Software and third-party Software provided under this Contract.
1001	The Contractor shall maintain warranty records and service agreements for all Hardware and third party Software in MOMs, and shall review Software upgrades and available patch reports to keep the Cashless Tolling System current.

7.1.1 Hardware/System Warranty Program

1002	The Hardware Warranty period for all Equipment furnished under this Contract except server Hardware shall be for a period of one (1) year, commencing on the date of Approved installations of each tolling location.
1003	In the one (1) year Hardware Warranty period, Warranty Maintenance shall include all Services required to maintain the System Hardware at required performance levels.
1004	In the Warranty period the Commission shall not be charged for any Services related to Maintenance beyond those associated with force majeure events such as vandalism, relocation of Equipment at the request of the Commission, or damage clearly caused by events outside the control of the Contractor, as set forth in the Contract.
1005	All Equipment mounting Hardware and brackets provided as a part of this Scope of Work shall be warrantied for the Contract Term.
1006	The one (1) year Warranty on any additional Approved installed and replaced Hardware and Equipment shall commence when the Hardware and Equipment are installed.
1007	The Contractor shall take all reasonable and prudent steps to ensure that all Hardware and third party Software used by the System is supported by the third party vendor and all warranties remain in effect.

7.1.1.1 *Server Hardware Warranty and Support Services*

1008	All server Hardware shall have a full manufacturer's Warranty and support services for a period of minimum five (5) years beginning with the Acceptance of the Cashless Tolling System for the Cashless Toll Host and for the server Hardware at each tolling point beginning with Acceptance at that tolling point.

7.1.1.2 *Third Party Software Warranty*

1009	All third party Software shall have a full manufacturer's Warranty and Upgrade Services, which shall be no less than a period of five (5) years beginning with the Acceptance of the Cashless Tolling System.

7.1.1.3 *Software Warranty*

1010	The Cashless Tolling System Software shall have a full Warranty against defects and failures beginning at System Acceptance through the end of the Contract Term subject to the applicable provisions within the Agreement.

7.2 General Description of Cashless Tolling System Maintenance and Software Support Services

1011	The Contractor shall provide one hundred percent (100) percent of the Cashless Tolling In-Lane Systems and LAN Maintenance Services.
1012	The Contractor shall provide Level 2 and Level 3 Cashless Toll Host System Hardware, Software, Database and System Administration Maintenance Services including operating system and Software security updates through a coordinated effort with the Commission.
1013	Hardware Maintenance Services under this Contract shall be for a period as set forth in the Contract from Acceptance of each Cashless Tolling plaza location of the Project. The first year of Hardware Maintenance for each Cashless Tolling plaza location shall be covered under the System Warranty Program as set forth in Section 7.1.1.
1014	The Contractor shall provide Software Maintenance Services as described in this Scope of Work.
1015	Software Maintenance and Support Services under this Contract shall be for a period as set forth in the Contract from Acceptance of the Project. A Software Warranty shall be provided for the term of the Contract as set forth in Section 7.1.1.3.
1016	The Contractor shall be responsible for supporting and maintaining the Cashless Tolling System for any time period in which the System is installed, Commissioned and placed into revenue service but has not passed required testing until such time as the Warranty Period commences. The Maintenance of the Cashless Tolling System provided under this Contract prior to start of Warranty is not included in the term of the Maintenance and Software Support Services.

1017	The Contractor shall be responsible for supporting and maintaining the Cashless Tolling System at the test plazas until the test plazas are Accepted and Warranty has commenced.
1018	The one (1) year Cashless Tolling System Warranty for each implementation shall commence after the Acceptance of each implementation of the Cashless Tolling Project. The one (1) year Cashless Tolling System Warranty on all other new tolling points deployed by the Contractor shall commence after the Acceptance of the Cashless Tolling System for each subsequent implementations of the Cashless Tolling Project. The one (1) year Cashless Toll Host System Warranty shall commence after the Acceptance of the base Contract implementation of the Project.
1019	All changes and modifications to the Cashless Tolling System shall be Approved by the Commission and shall follow the Commission Attachment 13 - ETC System Change Control Procedures V1.6.
1020	The Services and Work performed under the Contract are considered highly confidential and the Contractor personnel shall at all times comply with the Commission security and privacy requirements. Contractor employees shall not discuss their Work with unauthorized personnel or any individuals not directly associated with the Commission.

7.3 Cashless Tolling System Maintenance and Software Support Services - Contractor

The Maintenance and Software Support Services shall include monitoring; preventive; pervasive; corrective; security related and emergency Maintenance Services and certain upgrades and enhancements to be performed on all elements of the Cashless Tolling System. Payment for Maintenance and Software Support Services on the Cashless Tolling System for each Cashless Tolling point implemented of the Project shall commence after the expiration of the one-year Cashless Tolling System Warranty Period. The Contractor shall provide the following Cashless Tolling System Maintenance and Software Support Services at the levels defined in Section VII.

7.3.1 Cashless Tolling In-lane Systems Hardware Maintenance and Software Support Services

Upon the completion of the Warranty Program at each Approved tolling point, the monitoring and Maintenance functions described below shall be performed by the Contractor.

1021	During and after the Warranty period the Contractor shall maintain the spare parts inventory in the MOMS and update accurate Equipment inventory status in the MOMS.
1022	The PTC Operations Group shall monitor the System for failures and alarms, and confirm a MOMS work order has been created for each failure as defined regardless of Maintenance Level.

1023	The Contractor shall automate the MOMS work order process to the maximum extent possible to anticipate and automate work orders. If a MOMS work order has not been created, the Contractor or the PTC Operations Group shall create a work order in MOMS and assign it to a technician for Maintenance action or troubleshooting.
1024	The Contractor shall perform the necessary Maintenance and close the MOMS work order upon confirmation that the failure has been successfully corrected. The Contractor shall notify the PTC Operations Group that the repair action is complete and work order has been closed.
1025	The Contractor shall perform all daily, weekly and scheduled preventive Maintenance on all Cashless Tolling In-lane System Hardware.
1026	Equipment racks and panels shall be inspected and maintained by the Contractor in full operational, orderly condition, and free of debris and dirt.
1027	The Contractor shall inspect and maintain all Contractor provided equipment mounting hardware and brackets provided as a part of its Scope of Work and shall also inform the Commission of any potential problems.
1028	The Contractor shall inspect and test cables, wiring and terminations to detect problems and degradation. Any item not in compliance with Contract requirements shall be replaced by the Contractor at no cost to the Commission unless such failure is considered non-chargeable as described in Section 2.5.4.2 Non-Chargeable Failures.
1029	The Contractor shall maintain the Cashless Tolling In-lane System Local Area Network that includes all Contractor network connections in the toll equipment building and interconnections between the toll equipment buildings as defined in *Attachment 3b: PTC Communications Network Responsibilities*.
1030	The Contractor shall provide monitoring and troubleshooting as part of Maintenance Services for the Cashless Tolling In-lane System including, but not be limited to:
	• zone controllers;
	• AVI system;
	• AVC system;
	• LPICPS components and controllers;
	• OCR/ALPR Software(if the option to implement OCR/ALPR is exercised);
	• facility servers and Software (if provided);
	• DVAS cameras;
	• all cables, wiring, junction boxes, and terminations;
	• all conduits and cable trays;
	• all In-lane System electronics and controllers;
	• Contractor supplied LAN equipment and
	• all In-lane Contractor and third-party Software.

1031	All System administrative functions, if not automated, shall be performed by the Contractor at regular intervals as part of the System preventive Maintenance Services according to the Approved Maintenance Plan to ensure System performance is optimized. All such System administrative functions shall be scheduled as preventive maintenance work orders through MOMS and tracked.
1032	Continuous monitoring of System operations shall be performed by the Contractor in conjunction with the Commission to verify System is functional; security posture is adequate; processes are being executed as scheduled; files are transmitted as specified, and System is operating to Contract performance requirements.
1033	Continuous monitoring by the Contractor shall include but not be limited to:
	• confirming and verifying receipt of all the MOMS messages and Alerts;
	• verifying the MOMS is receiving and processing System events and reporting the correct status;
	• evaluating sample transactions data for exception;
	• confirming data transmission to the Cashless Toll Host System;
	• confirming image and transaction transmission to the existing CSC/VPC systems;
	• performing routine diagnostics on all in-lane subsystems;
	• verifying processes, programs and scheduled jobs are successful;
	• reviewing comparative reports to identify System degradation;
	• confirming successful transfer of Transponder Status List to the lanes;
	• reviewing OCR/ALPR results (if the option to implement OCR/ALPR is exercised) and poor quality images;
	• monitoring the DVAS video and event data;
	• reviewing sample images;
	• correcting identified performance issues;
	• evaluating storage requirements;
	• verify time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold, and
	• reviewing error logs and Alerts.
1034	The Contractor shall perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool of the Cashless Toll System and produce ensuing reports at the request of the Commission.
1035	The Contractor shall monitor for intrusion attempts and prevent all unauthorized access and intrusions at all levels and report such events to the MOMS. Any intrusion, compromise or breach must be reported to Commission IT Security within 12 hours of detection.
1036	The Contractor shall monitor notifications and initiate corrective actions upon Commission approval on the Cashless Tolling System to meet requirements.

1037	The Contractor shall perform any Maintenance, daily, weekly, or periodic, required to maintain the System at required performance levels (for example: archival and purging in accordance with the Commission's retention policy).
1038	The Contractor shall update all Software drivers to meet any new standard Operating Systems as they become available and such updates shall be deployed in accordance with Commission standards.
1039	The Contractor shall retrieve data manually from the zone controllers and download Transponder Status List and toll rate and schedule files in the event there is an extended communications failure.
1040	The Contractor shall re-establish or re-install System files, programs and parameters, as required, following a failure or damage to the System and return lanes to fully operational condition.
1041	In the event of a declared disaster the Contractor shall perform procedures as needed and return lanes to fully operational condition.
1042	The Contractor shall perform OCR/ALPR updates as required in accordance with the Commission ECO procedures within an Approved Commission time frame to support license plate changes if the option to implement OCR/ALPR is exercised.
1043	As part of the Software Support Services the Contractor shall develop and test Software as required to accommodate corrective action, changes to Business Rules or lane configurations in accordance with the Commission ECO procedures. Scope shall include provision of evidence packages and release notes detailing changes for Commission review and Approval, installation of new Software and confirmation of successful installation.
1044	The Contractor shall analyze daily and weekly trends to identify problems, including but not limited to:
	• high number of transactions without transponder;
	• high number of Class Mismatch transactions;
	• abnormal changes in traffic counts and class;
	• high number of exceptions or unusual occurrences;
	• high number of invalid transponder transactions;
	• abnormal changes in transponder counts and status changes and
	• high number of rejected images.

7.3.2 Cashless Toll Host System Server and Database Administration, Maintenance and Software Support Services

The requirements in this section describe the Services to be provided by the Contractor under the Maintenance and Software Support Service for the Cashless Tolling System.

1045	The Contractor shall provide Maintenance and Software Support Service for all elements of the Cashless Toll Host System when located at a Commission Approved offsite location or Cloud environment in all environments required in the Contract including but not limited to:
	• Cashless Toll Host System Hardware;
	• operating systems;
	• databases;
	• application Software;
	• third-party Software patches;
	• security updates;
	• Software configuration and
	• Software version control.
NA	The Commission may provide Maintenance and Software Support Service for elements of the Cashless Toll Host System when located at the PTC Data Centers including but not limited to:
	• operating systems;
	• third-party Software patches and
	• security updates;
1046	The Contractor shall provide continuous 24x7 system administration services coverage on the Cashless Toll Host System, if off-site or Cloud location, to ensure that it is performing and will continue to perform at a satisfactory level.
1047	The Contractor support staff shall be available on-call 24x7 to investigate and perform maintenance for those failures escalated to the Contractor.
1048	System administration services shall include monitoring and corrective action to ensure System performance is in accordance with requirements of this Scope of Work. This shall include but is not limited to:
	• monitoring Cashless Toll Host System Hardware at the primary and secondary locations including servers; storage devices and backup systems;
	• verifying processes, programs, and scheduled jobs are successful;
	• confirming all transactions and images are successfully transmitted to the receiving Systems;
	• confirming all messages described in the ICD are being successfully exchanged between the Cashless Tolling Systems, existing CSC/VPC systems, SAP and PTC host system;
	• confirming applications are functional and available to Authorized Users;
	• confirming all scheduled reports are successfully generated and available to Authorized Users;
	• verifying all processes are functioning and data and images are moving successfully though the queues;
	• verifying all third-party interface are functioning and successfully exchanging files;
	• scheduling of preventive, corrective and predictive Maintenance activities;

	• performing any daily, weekly, or periodic Maintenance required to maintain the System at required performance levels (for example: indexing and tuning databases; archiving and purging in accordance with the Commission's retention policy);
	• maintaining and updating records of all Maintenance events and activities in the MOMS;
	• performing third-party software or firmware upgrades in conjunction with the Commission, as required and to be compliant to security requirements including but not limited to performing security software upgrades, database upgrades and operating system upgrades at offsite or Cloud locations;
	• support upgrades performed by the Commission for third-party software or firmware as required to be compliant to security requirements including but not limited to performing security software upgrades and operating system upgrades at PTC Data Centers;
	• contact with the Commission, operations and contractors regarding System issues, performance, security posture, Software Release and Maintenance scheduling;
	• performing Approved manual actions, adjustments and updates to the System data based on predefined criteria to correct issues and as authorized by the Commission;
	• re-establishment or re-installation of System files, programs and parameters, as required, following a failure or damage to the System;
	• monitoring of error logs and System logs;
	• restoration testing of backups (Software and data) to be performed yearly in coordination with the Commission with the results reported back to the Commission.
	• Maintenance of up-to-date Software backups (all System Software and data);
	• installation of new Software and confirmation of successful installation;
	• verifying time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold;
	• assisting Commission administrative staff as requested by the Commission;
	• troubleshooting Cashless Tolling System issues;
	• creation of Ad-hoc reports requested by the Commission;
	• generation of queries as requested by the Commission, and
	• analysis of data as requested by the Commission.
1049	Software support services shall include monitoring and corrective action to ensure System performance is in accordance with requirements of this Scope of Work, to include database management and operation. This shall include, but is not limited to:
	• investigation and analysis of errors and exceptions and taking corrective action including correcting the problem and reprocessing the data;
	• monitoring of notifications, and initiating corrective actions on application programs to meet requirements;
	• updates to the Cashless Tolling System and application to support upgrades to hardware or third-party software;

	• updates to the Cashless Tolling System and application to support all changes to Business Rules and Cashless Tolling System configurable parameters, and deploy changes in production according to Commission Approved deployment schedule;
	• updates to the Cashless Tolling System and application to support changes to E-ZPass Group ICD including the addition of new E-ZPass Group Agencies;
	• updates to the Cashless Tolling System and application to support the addition of new Interoperable Agencies;
	• updates to the Cashless Tolling System and application to support changes to continue its compliance to updated security requirements, and
	• updates to the Cashless Tolling System and application to support legislative and statutory changes.
1050	As part of the Software Support Services the Contractor shall develop and test Software as required to accommodate corrective action, changes to Business Rules or lane configurations in accordance with the Commission ECO procedures. Scope shall include provision of evidence packages and release notes detailing changes for Commission review and Approval, installation of new Software and confirmation of successful installation.

7.4 Cashless Tolling Network Maintenance Support Services – Commission Responsibility

Commission technical staff will provide Maintenance Support Services for the Commission Toll System WAN Network as specified in this section. In addition Commission technical staff will provide 24x7 monitoring services for the Cashless Toll Host System if it is located at the PTC Data Center. If the Cashless Toll Host System is located at a remote location or privately hosted Cloud site, it will be the responsibility of the Contractor to provide 24x7 monitoring services for the Cashless Toll Host as in detailed in *Attachment 11: Maintenance Responsibility Matrix*.

NA	Commission technical staff will maintain and monitor the WAN system that includes:
	• connection of the PTC Primary Data Center to the network equipment at the toll equipment building at each tolling point location;
	• connection of the PTC Primary Data Center to the CSC/VPC primary and disaster recovery locations;
	• connection to the existing PTC host locations and
	• operating system and Software patching levels for the Commission provided network equipment security postures.
NA	The Commission will upgrade and update the network security to ensure the Commission network is always in compliance with updated security standards.
NA	If the Cashless Toll Host is located at the PTC Data Center, the Commission will have additional responsibility for Operating systems and Database updates, security updates and 3rd party patches.

1051	The Contractor shall provide Commission Approved diagnostic aids, tools and Equipment to perform monitoring services, as necessary to assist Commission technical staff monitor the Cashless Toll Host System.

7.5 Updates to Maintenance Plan and Other Maintenance Related Documentation

1052	The Contractor shall update the Maintenance Plan and other Maintenance documentation to reflect any changes to the policies or procedures developed by the Contractor and Approved by the Commission, for the Cashless Tolling System Maintenance services. The Maintenance Plan shall be updated and uploaded to the online System documentation library every year for review and Approval. However, sections of the Maintenance Plan or its Appendices shall be submitted for review and Approval as the changes are identified. A version update sheet shall be included with the Maintenance Plan, and the Maintenance Plan on file shall have the most recent version from the configuration management database.

7.6 Maintenance Requirements

7.6.1 Preventive Maintenance

1053	The Contractor shall provide and perform onsite Preventive Maintenance on the Cashless Tolling In-lane System Hardware, Cashless Toll Host System Hardware, Contractor LAN communications equipment and Software in accordance with the Approved Preventive Maintenance plan.
1054	The Contractor shall inspect all Contractor installed Equipment, both major components and support components (fans, equipment racks, storage units) that constitute the Cashless Tolling System and shall make such repairs; cleaning; adjustments, and replacements of components as necessary to maintain the Equipment in normal operating condition in accordance with the Approved Preventive Maintenance plan.
1055	In addition to required ongoing Contractor monitoring the servers and data processing units shall be actively monitored by the Contractor to verify that storage space is not reaching limits, disks are not fragmented or damaged, Software being used is of latest version per the configuration management and data is being processed and transferred in an appropriate manner.
1056	Transaction and image processing volumes and times shall be monitored at the lane by the Contractor and Systems optimized for performance with Commission Approval.
1057	Report generation times, System access times, and System response time shall be monitored by the Contractor to ensure performance meets the Contractual requirements.

1058	The Contractor shall include all Equipment and Systems as part of the Preventive Maintenance in accordance with the original Equipment manufacturer's guidelines. Any variations or exceptions shall be noted by the Contractor and Approved in advance by the Commission.
1059	Preventive Maintenance shall be performed by the Contractor during the normal working hours when Maintenance technicians are scheduled to be onsite. Diagnostic aids, tools and Equipment Approved by the Commission to perform Preventive Maintenance equipment analysis shall be provided by the Contractor, as necessary.
1060	Preventive Maintenance requiring lane closure shall be scheduled by the Contractor for off-peak travel periods; evenings; Saturdays, and Sundays and coordinated with the Commission, so that the Work shall not interfere with normal traffic flow, unless otherwise Approved by the Commission.
1061	The Contractor shall provide a Preventive Maintenance schedule, to be Approved by the Commission, as part of the Maintenance Plan. The schedule shall detail the preventive Maintenance to be performed on each Equipment item and system. The schedule shall provide a description of the Work to be performed, expected duration and the frequency.
1062	The preventive Maintenance schedule shall be entered by the Contractor into the MOMS and work orders shall be automatically created to alert Contractor staff of required preventive Maintenance. Failure of the Contractor to perform required preventive Maintenance in accordance with the Approved schedule shall result in liquidated damages, as specified below in the Maintenance Performance Requirements Section 7.22.

7.6.2 Predictive Maintenance

1063	The Contractor shall establish a Predictive Maintenance program by which failure analysis can be determined by identifying potential failures through the MOMS records. The failure analysis shall take into account either or both specific components and sub-systems. This information shall then be used to investigate and correct problems and failures that could disrupt toll collection operations.
1064	The Contractor shall maintain all failure analysis documentation on site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.

7.6.3 Pervasive Maintenance

1065	The Contractor shall establish a Pervasive Maintenance program by which failure analysis can be determined by identifying continuing or repetitive failures through the MOMS records. The failure analysis shall take into account either or both specific components and sub-systems. This information shall then be used to investigate and correct problems and failures that continue to occur on a particular item of equipment, sub-system, or component.
1066	The Contractor shall maintain all failure analysis documentation on site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.

7.6.4 Corrective Maintenance

1067	All Work performed by the Contractor to correct problems to meet the requirements of the Contract or Software defects shall be considered as Corrective Maintenance and shall be corrected based on priority level within the time specified within this scope of work under Maintenance Coverage and Response Times. Such problems include but are not limited to:
	• failure of System functions;
	• failure of processes and programs;
	• report issues;
	• application failures;
	• toll system network issues;
	• inadequate security posture;
	• degraded System or component performance, and
	• non-conforming availability or MTBF.
1068	Corrective action that require modification to the Software shall be reviewed by the Commission and corrections deployed in accordance with Approved release notes and Commission schedule.
1069	The Commission shall be notified before any corrective Maintenance is performed.
1070	Notwithstanding the foregoing, for repeated failure of Equipment, components, or Systems, the Contractor shall undertake an investigation as outlined in Section 7.6.3. If the problem is determined by the Commission to be a pervasive defect, the Contractor shall be responsible for the replacement and repair of the problem Equipment, component, or System at no additional charge to the Commission.

7.6.5 Onsite Corrective Maintenance for Cashless Toll Host System

1071	Upon the confirmation that a failure/work order qualifies as Level 3 Onsite Corrective Maintenance, the Contractor shall submit a request to the Commission for Approval to perform the Level 3 Corrective Maintenance in accordance with the of the Commission ECO process.
1072	The Contractor shall submit a schedule for performing the Onsite Corrective Maintenance and coordinate all travel with the Commission.
1073	Upon Authorization to perform the Onsite Corrective Maintenance, the Contractor shall initiate the Work. An authorized Commission representative shall be notified when the Contractor personnel is onsite at the Cashless Toll Host facility performing the corrective action.
1074	The details of the Work shall be recorded in MOMS by the Contractor and upon verification of the corrective action by the Commission, the Contractor Work on this corrective action item shall be considered complete.

7.6.6 Upgrades and Enhancements

1075	Upgrades and enhancements required for reasons such as to meet changes to standards, statutes or interoperability Equipment changes or the addition of new functionality; or, that provide the Commission with a demonstrable benefit in performance, costs or productivity, shall be proposed with costs and schedule by the Contractor in accordance with the requirements of the Commission ECO process, as set forth in the Contract.
1076	Software modifications that are required to maintain and support the System as a part of the normal course of business such as version changes, configuration or parameter changes or minor changes to Software or code such as changes to the existing ICDs; or Software modifications required to ensure System is compliant to specified standard (for example security) or, changes that improve the Contractor's ability to maintain and support the System, shall ***not*** be considered upgrades or enhancements and shall be provided by the Contractor at no cost to the Commission. All such Software modifications shall be in accordance with the of the Commission ECO process.

7.7 Maintenance Coverage and Response Times

1077	The Contractor shall post a weekly schedule identifying personnel and times for onsite and on-call Maintenance. Commission Approval is required for any change in Contractor staff. The Contractor shall provide to the Commission the updated active personnel list and contact information when there is a change in personnel.
1078	Response to calls and repair times shall be determined by priority as described below. Contractor failure to meet the response and repair time criteria described below (requirement #1086) shall result in liquidated damages as specified in Section 7.22.
1079	Regardless of Level 2 or Level 3 service, onsite or on-call, acknowledgement of receipt of notification of a Maintenance issue or human acknowledgment of a failure shall not exceed thirty (30) minutes after the failure notification was recorded or problem was reported.
1080	Priority of failures shall be defined during the Design phase. Time to respond and complete repair are determined by priority and is defined as follows:

	• Priority 1: Defined as any malfunction or fault or software defect that results in the immediate loss of revenue; security breach; closure of lanes outside of the Commission lane closure requirements; hazard to personnel or driving public; loss of audit data; loss of redundancy in any redundant System components; loss of functionality that impacts E-ZPass Group Agencies or failure that negatively impacts Lane or Cashless Toll Host System operations. o For In-lane Systems Maintenance this priority shall have a two (2) hour time to respond and complete repair. o For Level 2 Maintenance this priority shall have a two (2) hour time to respond and complete repair. o For Level 3 Maintenance this priority shall have two (2) hour time to complete repair once Approval to commence Work is provided by the Commission and Maintenance personnel is onsite and ready to perform the repair. The Contractor shall make every effort to be onsite within twenty-four (24) hours of Approval to commence Work.
	• Priority 2: Defined as any malfunction or fault that degrades the System performance but not the operational ability of the System. It includes, but is not limited to inaccurate reporting, inability to reconcile revenue or loss of System functionality that impacts access to data. o For In-lane Systems Maintenance this priority shall have a four (4) hour time to respond and complete repair. o For Level 2 Maintenance this priority shall have a four (4) hour time to respond and complete repair. o For Level 3 Maintenance this priority shall have two (2) hour time to complete repair once Approval to commence Work is provided by the Commission and Maintenance personnel is onsite and ready to perform the repair. The Contractor shall make every effort to be onsite within forty-eight (48) hours of Approval to commence Work.
	• Priority 3: Defined as any action or event that has the potential to result in a malfunction or degrading of the System performance but has not impacted performance and is not anticipated to immediately impact performance. o For In-lane Systems Maintenance this priority shall have a twenty four (24) hour time to respond and complete repair. o For Level 2 Maintenance this priority shall have a twenty-four (24) hour time to respond and complete repair. o For Level 3 Maintenance the Contractor and the Commission shall agree on the time period for onsite correction but time to respond and complete repair shall be no longer than three (3) Calendar Days of Approval to commence Work.
1081	For Priority 1 and priority 2 failures the Contractor shall provide dedicated resources until the issue has been resolved to the Commission's satisfaction.
1082	Outages and tasks performed under the Preventive Maintenance period shall be defined as Priority 4. The System shall be available and fully operational within the Approved time schedule for such activities and upon completion of the Preventive Maintenance period. Any failures generated or resulting from Preventive Maintenance activities shall be accounted for as Priorities 1, 2 or 3 and be addressed in accordance with these requirements.

1083	Response and Repair time is defined as the combined time from when failure occurred or problem was reported to when the repair or correction of the failure occurred; the period of time beginning when the failure occurred (failure time) and ending when the fault condition is corrected and returned to normal operations.
1084	Response and repair times for every Maintenance event shall be recorded in the MOMS and reported and such reports shall be provided to the Commission in accordance with the reporting requirements of this Scope of Work.

7.8 Notifications

1085	The entry of a problem (either by the System or an Authorized User) into the MOMS shall constitute the start of the acknowledgment time for purposes of measuring the Contractor's acknowledgment time and response/repair time.
1086	For purposes of measurement of performance and for the development of Maintenance policy and procedures, notification of System malfunctions, problems and discrepancies may be provided to the Contractor in three (3) different methods, summarized below.
	• Verbal Notification: Defined as an in-person notification or telephone call. In all cases, the first conversation with, or notification of the Contractor shall signify the start of the response time for purposes of measuring the Contractor's response time. All verbal notifications shall be recorded in MOMS by the Contractor.
	• Written Notification: Defined as a written description of a problem or condition, typically provided by the Commission or its representative. Written notification could be faxed, texted, or emailed to the Contractor by a customer or user. The time of receipt of fax, message or email shall signify the start of the response time for purposes of measuring the Contractor's response time. All written notifications shall be recorded in MOMS by the Contractor.
	• MOMS Notification: Defined as an automatic notification through the MOMS identifying a problem within the Cashless Tolling System that is the Maintenance responsibility of the Contractor and sending out an automatic alert message by email or text to a Contractor's Maintenance staff to respond to the failure. In addition to the Contractor notification, the Alert shall be posted on the MOMS and available via reports. The presence of a MOMS notification in the System shall constitute the start of the response time for purposes of measuring the Contractor's response time.

7.9 Recording of Maintenance Activities

1087	The Contractor and the Commission shall utilize the MOMS for initiating the work orders. MOMS shall be utilized for recording and tracking all Maintenance and Software Support Services performed on the Cashless Tolling System. All Equipment provided under this Contract shall be tracked through MOMS from the purchase to their disposal.
1088	In all cases, it shall be the Contractor's responsibility to log all reported Maintenance activities

	into the MOMS. The Contractor shall also be responsible for documenting all information and issues related to a failure condition, including all actions taken to complete the correction into the MOMS.
1089	The work order shall contain as much information as possible in order for persons other than the technician or his supervisor to reasonably determine the fault, when it was worked on, the corrective action and any other information pertaining to the individual Maintenance event, including replacement of parts.
1090	All performance metrics shall be recorded and tracked through the MOMS and compliance to performance requirements shall be validated using MOMS reports.
1091	It is the Contractor's responsibility to ensure that its Maintenance staff has real time access to the MOMS and that all the required connections are established and ongoing to ensure that the Maintenance staff has remote access. Maintenance staff shall be trained in the use of the MOMS.

7.10 Spare Parts

1092	Contractor shall be responsible for the inventory of all spare parts at an Approved storage facility(ies) and shall be insured in this regard as set forth in the Contract. The Contractor shall account for all spare parts and shall provide safeguards against theft, damage, or loss of the spare parts.
1093	The Contractor shall ensure that only spare parts and equipment required to service the Cashless Tolling System and LAN communications spare equipment are stored at this facility and shall only be used for the PTC Cashless Tolling System.

7.10.1 Spare Parts Inventory Management

1094	The Contractor shall be responsible for the Maintenance of an adequate spare parts inventory. The Contractor is responsible for monitoring and identifying the existing spare parts inventory, ordering spare parts as required, and proposing the quantity needed to maintain the required performance.
1095	The Contractor shall update and recommend a spare part quantity to be maintained in order to support the Cashless Tolling System functionality and operational readiness.
1096	The Contractor shall hold the Commission harmless in the event spare parts or consumables are not available as a consequence of the Contractor's failure to purchase or replenish the spare parts or consumables Approved by the Commission.
1097	During the term of this Agreement (including after the expiration of any applicable warranty periods) the Contractor shall be responsible for purchasing all miscellaneous repair items and consumable materials necessary to maintain the Cashless Tolling System at the performance levels specified in the Contract.

7.10.2 Spare Part Inventory and Tracking

1098	The Contractor shall be responsible for recording the inventory into the MOMS, monitoring the inventory quantity and ensuring that the inventory is maintained to the levels required.
1099	The Contractor shall keep accurate records of all parts entering and leaving inventory including but not limited to: time and date part was dispensed, and the location within the Cashless Tolling System where the part was dispatched and used.
1100	The Contractor shall also be responsible for tracking of all warranty replacement for Contractor provided Equipment through returned materials authorization (RMA) process. If the replaced part is under warranty, the part shall be immediately replaced with a new part. If the replaced part is out of warranty, the Contractor shall make every effort to repair the replaced item to a usable status and place the part back into spares inventory.
1101	If the Contractor is unable to repair the part, a new part shall be purchased and placed into spares inventory. The details of the repair efforts, including problem; status; inventory, and repair disposition shall be included in the MOMS inventory and repair database.

7.10.3 Procurement and Control of Spare Parts

1102	Thirty (30) days prior to placing the Cashless Tolling System in revenue collection the Contractor shall have purchased and have on hand at Commission facilities the agreed upon inventory of spare parts.
1103	The spare parts shall be purchased on behalf of the Commission and shall be invoiced at the time of installation and owned by the Commission in a manner to ensure that the Commission receives the maximum benefit from any warranties associated with the spare parts. After the warranty period, the Commission shall reserve the right to purchase all spare parts directly from the source and all purchases will be coordinated through the Commission Procurement Office. After the Warranty period, Contractor provided spare parts not purchased directly by the Commission shall be provided at cost, shall not include any mark up and shall be in accordance with the agreed to Contract price. The Commission shall be under no obligation to buy back excess spare parts purchased by the Contractor.
1104	The Contractor shall cooperate with and assist the Commission to ensure that all spare parts, equipment, and other Commission owned property is stored or otherwise located on the Contractor's property or in Contractor controlled space shall not be subject to any risk of being confiscated, claimed, attached, withheld by a landlord, creditor, or similar risk.
1105	This cooperation includes, but is not be limited to, affixing appropriate labeling to track within MOMS and identify as the property of the Commission, with a Commission specific part or control number. All spare parts and consumables shall be maintained by the Contractor free and clear of any liens and encumbrances of any kind. The Commission shall have the right to inspect the spares and consumables inventory upon request.

1106	The facility and storage area shall be secured and connected to an up-to-date security network system with alarm notification provided to the Contractor's Maintenance staff. Further, it is required that the Commission shall have full and unrestricted access to the Maintenance and or storage facility.
1107	Any spare parts that are lost or damaged due to the negligence, intentional act, or omission of the Contractor or its employees, Subcontractors, agents, or invitees shall be replaced by the Contractor at its sole cost. The Commission may elect to assume responsibility at any time for storage of spare parts, and the Contractor shall deliver all spare parts to the Commission for storage after receipt of reasonable notice from the Commission.

7.11 Repair Depot

1108	The Contractor shall be responsible for providing and staffing a repair depot for the return and repair of Cashless Tolling System components.
1109	The Contractor shall be responsible for repairing failed Cashless Tolling System components and returning them to the spare parts inventory.
1110	Failed components shall be tracked by the Contractor utilizing MOMS, including final resolution. Component tracking shall include but not limited to the following: receipt, repair date/information, replace reason, date of return.
1111	The Contractor shall indicate the details of the repairs performed on any components. This shall include but not be limited to boards and connectors replaced.
1112	If the replaced part is under Warranty, the part shall be immediately replaced with a new part by the Contractor. If the replaced part is out of Warranty, the Contractor shall make every effort to repair the replaced item to a usable status and place the part back into spares inventory. Except for pervasive defects, for out of Warranty components, the Contractor shall document why the component could not be repaired and advise the Commission that a new spare must be ordered.

7.12 Audits

1113	The Contractor shall completely support the Commission in any audit activity relating to the PTC's Cashless Tolling System or operations. In addition, the Contractor shall conduct audits in accordance with the Contractor's Quality Assurance Program. All deficiencies identified through the Audit process shall be successfully corrected by the Contractor. These audits may include, but are not limited to the following:
	• internal control procedures;
	• revenue/transaction reporting;
	• financial audit and
	• System processing and performance.
	• Third party security evaluations

7.13 Security Certification

1114	The Contractor in coordination with the Commission shall perform monthly security tests that are scheduled in the MOMS, as well as every time a new Software release is deployed or new network equipment is added or replaced to evaluate the security risk to the Cashless Tolling System and identifying potential vulnerabilities. Commission IT Security shall be a party to these security tests and shall be notified in advance of any scheduled tests.
1115	The Contractor is responsible for correcting all Cashless Tolling System security deficiencies at the Contractor's cost and ensuring there are no security risks.

7.14 Cooperation with Other Vendors and Providers

1116	The Contractor shall cooperate to the fullest extent with other contractors and third-party vendors in order to ensure that the lane and Cashless Tolling System operation and Maintenance do not conflict with or cause any deterrent in capability or service to the traveling public, customers, or the Commission.

7.15 Emergency Response Management

The Commission has an emergency response management plan and the Contractor shall follow the procedures set forth in this plan when an emergency situation is invoked.

1117	The Contractor shall immediately respond to any emergency situation, as notified by the Commission or otherwise, that may arise that has already or could potentially damage the Cashless Tolling System. The Contractor shall be prepared to put forth all necessary resources to divert or correct an emergency condition.
1118	Such emergency conditions shall be handled in accordance with the policies and procedures established by the Commission. The following are a few examples of emergency conditions:
	• weather related;
	• vehicle accident;
	• conditions that invoke the Disaster Recovery Plan;
	• third party (power outage or communication failure);
	• vandalism that causes parts of the Cashless Tolling System to be inoperable and
	• detection of security breaches, discovered vulnerabilities and activities that pose a security threat to the Commission's toll collection system;

7.16 Cashless Toll Host Disaster Recovery

1119	The Contractor shall perform Disaster Recovery procedures in accordance with the Approved Disaster Recovery Plan (DRP) in the event of a disaster and return the Cashless Toll Host System to a fully operational condition.
1120	The Contractor shall test the Disaster Recovery procedures on a yearly basis to validate that they are functioning per the Design. The Commission shall witness the test and the Contractor shall provide a report outlining the test, test results and any anomalies encountered for the Commission's review and Approval.
1121	The Contractor shall address any issues encountered from the yearly Disaster Recovery testing.

7.17 Incident and Revenue Loss Reporting

1122	The Contractor shall immediately notify the Commission of any incident or event whereby the potential or actual loss of revenue occurred or could potentially occur. The Contractor shall take immediate action to rectify the condition and return the Cashless Tolling System to normal functioning.
1123	A Monthly Incident Report shall be provided by the Contractor that includes a breakdown of lost electronic data and revenue by the Commission for each incident. If the condition is determined to be due to the fault of the Contractor, damages shall be assessed in accordance with the terms of the Contract.

7.18 Maintenance Staffing, Materials and Training

7.18.1 Maintenance Staffing Requirements

1124	The Contractor shall be responsible for maintaining an adequate level of technical staff to perform Maintenance and Software Support Services on the Cashless Tolling System. The Contractor shall ensure that sufficient staffing is available to cover all Maintenance activities identified in this Scope of Work at all times but particularly during the following periods:
	• Weekends;
	• Holidays;
	• personnel on vacation/sick time;
	• after regular scheduled Work hours (on call), and
	• unexpected emergency or crisis.
1125	The Contractor shall provide personnel to perform the following functions. It shall be the Contractor's responsibility to staff at appropriate levels to meet the requirements, using the Maintenance Plan as the guideline for staffing levels and full job descriptions:

	• **Management:** Contractor's Maintenance Management responsibilities include all Maintenance Management business dealings with the Contractor's Project Manager. Responsibilities include single point of contact for all Work related issues, including System problems, material issues, or Contractor personnel issues. Maintenance Management responsibilities also include ensuring that Systems are properly functioning and that the Maintenance and repair Work are properly performed and documented.
	• **Field Supervision:** The Field Supervisory functions include being responsible for the day to day operations of the technicians, ensuring that all required Work is accomplished properly and efficiently.
	• **Maintenance Technical Staff:** Responsibilities include responding to Maintenance activities and Alerts and for field level preventive Maintenance. Maintenance technicians shall be qualified and maintain the proper certifications to troubleshoot Maintenance problems and identify the source of the problem.
	• **Network Engineering:** Network Administration shall include the configuration and Maintenance of the network systems and communications network.
	• **Database Administration:** Database administration shall include management of the servers and databases in accordance with *Attachment 12 - Database Standards for the Pennsylvania Turnpike Commission*. The database administration shall cover all aspects of the System database and ensuring the database is optimized for peak performance. The responsibilities include the configuration and operation of the System database and generation of database queries as requested by the Commission and other support personnel.
	• **Systems Engineering:** Responsibilities include the configuration and monitoring of all System processing and verify that all operations and processes are occurring as scheduled. All MOMS alarms relating to process failures shall be investigated and resolved by the System engineering staff. Systems engineering responsibilities also include ensuring the proper configuration of all servers and coordinating all server Maintenance. System engineering responsibilities also include identifying issues, communicating with the System Software personnel and coordinating resolution of the problem. All user-related problems (application Software) shall also be handled by the System engineering personnel.
	• **Software Technical Staff:** Responsibilities include responding to Maintenance activities and Alerts and resolution of Software problems. Software technical staff shall be qualified to troubleshoot Maintenance problems, identify the source of the problem and correct the problem.
	• **Administrative Staff:** Responsibilities include support of the Contractor's Maintenance organization for the performance of Maintenance functions and to provide adequate phone and administrative support at the Maintenance management facility.
	• **ECO Management:** Responsibilities include managing the ECO process between the Contractor and the Commission. ECO management staff will ensure all the proper forms are filled out and proper authorizations are obtained to perform the change order work.
	• **Documentation Staff:** Responsibilities include updating and maintaining the documentation library to ensure all Cashless Tolling project documentation required in this Scope of Work is current and up to date.

7.18.2 Tools and Materials

1126	The Contractor shall provide all test Equipment and tools and support; including but not limited monitoring tools; smart phones; laptops, and any other items required for the Maintenance and Software Support staff to perform their Maintenance activities. All such devices shall have adequate and up-to-date security software and be Approved by Commission IT before they are used on the Cashless Tolling System network. All required test Equipment, tools and Software tools shall be on site (as required) and in adequate supply, with all required personnel trained on their use. All test Equipment shall be standard units that are capable of achieving the measurement they are intended to make.

7.18.3 Training Program

1127	The Contractor shall ensure that Maintenance and Software services staff is properly trained for requirements of maintaining the System. The Contractor shall provide a minimum of two (2) weeks of classroom and On the Job Training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned Maintenance duties.
1128	
1129	The Contractor shall provide trained qualified technical staff to support the Maintenance and Software Support Services described in the Scope of Work. It is the Contractor's sole responsibility to develop training necessary to successfully perform all of the Maintenance actions required to keep the System operational.
1130	The Contractor shall complete all required training and certifications prior to performing actual Maintenance and Software Support Services within a revenue collection environment. In the event changes or modifications are made to the System Equipment or configuration, supplemental training shall be accomplished prior to the actual service date for the changes or modifications.
1131	Training shall include the Contractor's safety standards and guidelines and applicable Commission policies and procedures.
1132	The Contractor shall provide documentation that this initial training has been successfully completed.
1133	Various training programs the Contractor shall institute shall include, but not be limited to, the following:
	• a thorough understanding and operating knowledge of the MOMS is required of all Maintenance personnel;
	• an in depth understanding of the Cashless Tolling System and operations, including all Equipment, Software, interfaces, file transfers and interconnections;
	• use of Maintenance documentation such as Maintenance manuals; drawings; vendor manuals, and parts list;

	• functions of the System monitoring tools used to manage the System monitoring tasks;
	• preventive Maintenance of all Systems and sub-systems;
	• troubleshooting; diagnostics; repair, testing, and Maintenance follow up;
	• System logs, errors logs and processing of exceptions;
	• System dataflow and workflow queues;
	• review of the Dashboard data and analysis;
	• discussion on the areas of responsibility;
	• special use Maintenance and monitoring tools;
	• queries and reports, and
	• System access and security.
1134	All System Maintenance and software support personnel shall attend the appropriate training sessions. The Commission staff shall be notified of and invited to attend any or all training sessions two (2) weeks in advance of the training.
1135	All System Maintenance and software support personnel shall be trained on scheduling, work assignments, escalation process, transportation requirements and communications;
1136	The Contractor shall provide training offered by vendors and original equipment manufacturer (OEM) for System components where available and required to properly operate, maintain, test and repair such Equipment and Software. Such training shall include but not be limited to:
	• LPICPS Equipment;
	• AVI Equipment;
	• AVC System;
	• DVAS;
	• MOMS;
	• network components and Software provided by the Contractor;
	• security software and security tests;
	• databases and
	• servers.

7.18.4 Training Materials and Ongoing Education

1137	Training material shall consist of Maintenance manuals, vendor manuals and any other documentation that provides for the efficient and effective Maintenance of the System and its components.

1138	The Contractor shall hold regular meetings with Commission technical personnel to update Maintenance procedures, bring proposed System changes to the attention of the technical staff and discuss Maintenance issues identified in the field. The Contractor shall provide the Commission with the meeting schedule so that the appropriate Commission staff can attend these meetings.
1139	The Commission shall have the right to make recordings and copies of all training program materials. The Contractor shall provide releases from all employees/contractors to allow unlimited, royalty free use and copies of recordings.

7.18.5 System Documentation

1140	The Contractor shall have appropriate System documentation available to all Maintenance and Software Support personnel as required to perform their respective duties.
1141	The Contractor shall make immediate updates to the online System documentation library to reflect any changes to the System Approved by the Commission. A version update sheet shall be included with the System documentation, and the documentation on file shall have the most recent version from the configuration management database. A complete submission of the System documentation shall be made every five (5) years that reflects all Approved changes to-date.

7.18.6 Training Records

1142	The Contractor shall keep accurate training records on all Contractor and Commission personnel. The Commission shall be permitted to audit personnel qualifications and training records at any time. Evidence of completion of training by Contractor and Commission personnel involved with system maintenance shall be provided to the Commission upon request.

7.19 Safety

1143	The Contractor shall adhere to all applicable safety standards and guidelines for working on or around energized Equipment and in a Maintenance environment, including but not limited to the following:
	• the Commission safety procedures and guidelines are on the Commission website: https://www.paturnpike.com/business/engineering_standards.aspx;
	• State of Pennsylvania safety procedures and guidelines;
	• OSHA (Occupational Safety and Health Administration);
	• NEMA (National Electrical Manufacturers Association);
	• NEC (National Electrical Code);
	• FHWA (Federal Highway Administration), and

	• any other local, state, or Federal ordinance, procedure, or guideline that provides for a safe operation and working environment.

7.20 Maintenance and Protection of Traffic (MPT)

1144	The Contractor shall perform maintenance and protection of traffic associated with the Cashless Tolling Maintenance Phase. The Contractor in conjunction with the Commission shall develop as a part of the Maintenance Plan an MPT procedure in accordance with standards on the Commission website: https://www.paturnpike.com/business/engineering_standards.aspx for Approval by the Commission.
1145	The Contractor shall adhere to the Approved MPT Plan when setting up, working under MPT and restoring lanes to traffic. The Contractor shall also work with the Commission to coordinate MPT Work and to adhere to the Commission advance notice requirements for Work in the lanes, both on a scheduled and emergency basis. All lane closures shall also be coordinated with the Commission Traffic Operations Center and public relations.

7.21 Maintenance and Software Support Records

1146	The Commission shall have access to all Maintenance and service records at any time for review and audit, upon reasonable notice. The Contractor shall provide monthly reports generated in the System that permits the Commission to evaluate Contractor's Maintenance performance.
1147	The Contractor's Maintenance manager shall maintain current, complete and accurate records for all Maintenance and Software Support Services activities. The Contractor's Maintenance manager shall institute procedures that make sure Maintenance staff enters complete information into the MOMS before closing a work order or trouble ticket.
1148	All preventive and predictive Maintenance activities shall be reported in the same manner as corrective or emergency Maintenance activities by the Contractor. The information shall be contained on the MOMS and shall be made available through various MOMS reports.

7.21.1 Maintenance Summary Reports

1149	The Contractor shall provide the Maintenance summary reports to the Commission on a monthly basis in advance of the Monthly Meeting. The format of the Monthly reports shall be Approved by the Commission and included in the Maintenance Plan.
1150	The Contractor shall provide an annual Executive Summary report to the Commission that summarizes the Contractor's performance for the Maintenance Year. The format of the Executive Summary reports shall be Approved by the Commission and included in the Maintenance Plan.
1151	Maintenance summary reports shall also be readily available in detail or summary format to the Commission applicable personnel via the network on a daily, weekly, or other time period basis determined by the Commission. The Maintenance summary report shall include but not be limited to:

	• a summary of the Contractor's performance for the month under review noting all accomplishments and deficiencies;
	• all Maintenance and System performance reports that show Contractor's compliance to Maintenance performance requirements;
	• detailed listing of failures and the impacted subsystems where Contractor's and System performance for the month were not in compliance with the performance requirements;
	• any exceptions the Contractor believes are non-chargeable failures that Contractor is not responsible for;
	• detailed list of parts replaced as a result of Maintenance actions, with an identification of warranty versus non-warranty replacement;
	• status of removed parts and Equipment with an aging status for parts under repair or replacement (serial numbers, being repaired in Maintenance shop, purchase replacement part);
	• trend analysis for repetitive failure;
	• status of spare parts inventory;
	• staffing report detailing positions and staff hours worked;
	• staff performance trends;
	• Software and firmware releases implemented;
	• major Maintenance activities that occurred and are scheduled to occur;
	• incidents that invoked emergency response or resulted in loss of toll revenue and
	• summary of work order, Software defects and trouble tickets by priority and category.

7.22 Performance Requirements for the Cashless Tolling System and Liquidated Damages

The Cashless Tolling System shall be designed, developed, tested, implemented and Maintained to meet the performance requirements specified herein without the need for manual intervention. The Contractor shall facilitate performance monitoring by reporting performance in clearly measurable terms. The Commission will conduct a review of the Contractor's performance on a monthly basis, as defined in the Maintenance Plan utilizing all required System reports provided by the Contractor and reports generated by the MOMS

1152	The Contractor shall submit backup data that confirms Contractor compliance to Maintenance performance requirements.
1153	A detailed listing of the Cashless Tolling System alarms for each subsystem shall be created with their priority levels in support of the performance data and Contractor's responsibility shall be clearly identified. The Contractor shall be responsible for all alarms and work orders that are escalated to the Contractor.

1154	Monthly performance reviews shall begin at the commencement of the Maintenance and Software Support Services Contract at each tolling point and shall continue monthly through the period of the Maintenance and Software Support Services Contract. The first month's performance shall be reviewed in month two of the Maintenance and Software Support Services Contract.
1155	Liquidated damages associated with monthly performance reviews, if applicable, shall be assessed beginning in month two for month one performance and shall continue through the period of the Maintenance and Software Support Services Contract.

7.22.1 Acknowledgement of All Priority Events

1156	The Contractor shall acknowledge receipt of all Priority events within thirty (30) minutes of failure/event notification.
1157	For the purposes of assessing Liquidated Damages, ninety five (95) percent of failure or priority event shall be acknowledged within thirty (30) minutes of receipt.
1158	The Contractor may be assessed Liquidated Damages of $250 if the acknowledgment percent is below the ninety five (95) percent threshold every month for every Priority event not acknowledged within the time frame specified in these Requirements.

7.22.2 Time to Respond and Repair (TTRR)

1159	The Contractor shall respond to and complete repair of **Priority 1** failures/events as follows:
	• Level 2 failures: respond and complete repair within two (2) hours of failure/event notification.
	• Level 3 failures: be onsite within twenty-four (24) hours of Approval to commence Work and once the Contractor is onsite, two (2) hour time to complete repair.
	The Contractor may be assessed Liquidated Damages of $100 per occurrence for every additional delay of one (1) hour to respond and complete repair of Priority 1 failures/events.
	The Contractor may be assessed Liquidated Damages of $500 per occurrence for every additional twenty-four (24) hour delay over the twenty-four (24) hours for being onsite and ready to commence Work.
1160	The Contractor shall respond to and complete repair of **Priority 2** failure/events as follows:
	• Level 2 failures: respond and complete repair within four (4) hours of failure/event notification.
	• Level 3 failures: be onsite within forty-eight (48) hours of Approval to commence Work and once the Contractor is onsite, two (2) hour time to complete repair.
	The Contractor may be assessed Liquidated Damages of $100 per occurrence for every additional delay of one (1) hour to respond and complete repair of Priority 2 failures/events.
	The Contractor may be assessed Liquidated Damages of $300 per occurrence for every additional twenty-four (24) hour delay over the forty-eight (48) hours for being onsite and ready to commence Work.

1161	The Contractor shall respond to and complete repair of **Priority 3** failures/events as follows:
	• Level 2 failures: respond and complete repair within twenty-four (24) hours of failure/event notification.
	• Level 3 failures: No longer than three (3) Calendar Days to respond and complete repair upon Approval to commence Work.
	The Contractor is not subject to any Liquidated Damages for Priority 3 failures/events.

7.22.3 Mean Time Between Failures (MTBF)

1162	The Contractor shall meet MTBF requirements for the following elements of the Cashless Tolling System Components:
	• Redundant Zone Controller: 30,000 hours
	• Automatic Vehicle Identification (AVI) System: 20,000 hours
	• Automatic Vehicle Classification (AVC) System: 30,000 hours
	• License Plate Image Capture and Processing System (LPICPS): 30,000 hours
	• Cashless Tolling Servers: 50,000 hours
	• Network Devices: 50,000 hours
1163	The reliability of the System components shall be calculated based on the following MTBF calculation: MTBF = # units x measuring period (hours)/ # chargeable failures
1164	The Contractor may be assessed Liquidated Damages of $500 for each Sub-system not meeting requirement due to Contractor and Contractor System failure.

7.22.4 Availability

1165	The Contractor shall meet availability requirements for the following elements of the Cashless Tolling System:
	• Lane Availability - Maintenance from Above or Below Toll Zones: 99.95%;
	• Cashless Toll Host System – 99.95%;
1166	Availability for each of the above systems shall be calculated as follows: Availability = 100% - [Total number of hours of downtime in time period X / Total hours in time period X].
1167	For every month in which the Toll Zone lane is available less than the minimum requirement, Contractor may be subject to Liquidated Damages of:
	• a 0.5% adjustment to the monthly Maintenance fee for availability of 99.90% and up to 99.94%;
	• a 2% adjustment to the monthly Maintenance fee for availability of 99.50% and up to 99.89%;
	• a 5% adjustment to the monthly Maintenance fee for availability of 99% and 99.49%.
	• a 10% adjustment to the monthly Maintenance fee for availability below 99%.

1168	For every month in which the Cashless Toll Host System is available less than the minimum requirement, Contractor may be subject to Liquidated Damages of:
	• a 1% adjustment to the monthly Maintenance fee for availability of 99.90% and up to 99.94%;
	• a 2% adjustment to the monthly Maintenance fee for availability of 99.50% and up to 99.89%;
	• a 5% adjustment to the monthly Maintenance fee for availability of 99% and 99.49%.
	• a 10% adjustment to the monthly Maintenance fee for availability below 99%.

7.22.5 Transmission of TSL and VEL to the In-Lane Cashless Tolling System

1169	Successfully and accurately transmit the Comprehensive Home and Away/Interoperable TSL to each of the zone controllers within thirty (30) minutes of the Cashless Toll Host System receipt of the TSL.
	The Contractor may be subject to Liquidated Damages of $500 per occurrence per one (1) hour delay for failure to successfully and accurately transmit the TSL to each of the zone controller.
1170	Successfully and accurately transmit the VEL (if exercised) to the In-lane Cashless Tolling System within thirty (30) minutes of the Cashless Toll Host System receipt of the VEL (if exercised).
1171	The Contractor is not subject to any Liquidated Damages.

7.22.6 Transmission of Toll Rate Tables and Schedules

1172	If toll rates are implemented in the lanes the when toll rate changes are scheduled, successfully and accurately transmit the toll rate tables and schedules to the zone controllers within twenty-four (24) hours prior to the effective date of the toll rate change.
1173	When toll rate changes are scheduled, successfully and accurately transmit the toll rate tables and schedules to the existing CSC/VPC system within twenty-four (24) hours prior to the effective date of the toll rate change.
1174	The Contractor may be subject to Liquidated Damages of $500 per occurrence per twenty-four (24) hour delay per System not receiving the data.

7.22.7 Transaction Processing and Transmission Requirements

1175	One hundred (100) percent of transactions (AVI and video transactions) from the roadway systems shall be obtained and reconciled by the Cashless Toll Host System with an accuracy of one hundred (100) percent.
1176	One hundred (100) percent of transactions (AVI and video transactions) identified to be pursuable and non-pursuable shall be successfully and accurately transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent within twenty-four (24) hours of vehicle transit.

1177	For failure to accurately process and reconcile one hundred (100) percent of all transactions and successfully and accurately transmit pursuable and non-pursuable transactions to the existing CSC/VPC system within twenty-four (24) hours of vehicle transit, the Contractor shall be subject to Liquidated Damages of $50 per twenty-four (24) hour delay per 1,000 transactions.

7.22.8 Image Processing Requirements

1178	One hundred (100) percent of images (video) from the roadway systems shall be successfully and accurately transmitted to the existing CSC/VPC system and reconciled to the transactions with an accuracy of one hundred (100) percent.
1179	One hundred (100) percent of images identified to be pursuable shall be successfully and accurately transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent within twenty-four (24) hours of vehicle transit.
1180	For failure to accurately process and reconcile one hundred (100) percent of all images and successfully and accurately transmit pursuable images to the existing CSC/VPC system within twenty-four (24) hours of vehicle transit, the Contractor shall be subject to Liquidated Damages $50 per twenty-four (24) hour delay per 1,000 images set.

7.22.9 License Plate Extraction Accuracy - if the option to implement OCR/ALPR is exercised

1181	The Contractor shall provide an accurate OCR/ALPR process which shall result in the Cashless Tolling System extracting the license plate, plate type, and jurisdiction with an accuracy of at least 99.95 percent on minimum seventy (70) percent of video transactions generated in the lanes.
1182	For error rates above the 0.05 percent rate, the Contractor may be subject to Liquidated Damages of $10 for each license plate in error.

7.22.10 Spare Parts Availability

1183	The Contractor shall maintain the required physical inventory of agreed to spare parts in accordance with the Contract.
1184	For failure to maintain spare parts inventory at adequate levels for the month, the Contractor may be subject to Liquidated Damages of $500 per month for each failure to maintain spare parts inventory per the counts required.

7.22.11 Preventive Maintenance

1185	The Contractor shall perform preventive Maintenance on the Cashless Tolling System according to Approved Preventive Maintenance schedule.
1186	The Contractor is not subject to any Liquidated Damages for this Maintenance Work.

7.23 Security

1187	All Contractor personnel shall be subject to appropriate security and background checks to the satisfaction of the Commission. The Contractor shall obtain written Approval from the Commission for all service personnel and each Contractor personnel shall be required to sign an acceptable use agreement.
1188	Contractor's personnel shall be issued Commission identification badges and shall wear such identification badges at all times when on the Commission property. Use of such identification badges for purposes other than work associated with the Contract will result in termination of the employee from the Contract and possible other legal or disciplinary action.
1189	The Services and Work performed under the Contract are considered highly confidential and the Contractor personnel shall at all times comply with applicable current computer and data industry standards with regard to data and information security. All employees of the Contractor shall not discuss their work with unauthorized personnel or any individuals not directly associated with the Commission.
1190	Contractor's personnel can only use Commission -assigned workstations, servers, and laptops to communicate with the Cashless Tolling System while on Commission premises.
1191	The Commission will identify and designate a primary point of contact for the Contractor. Under most circumstances, the Contractor will limit communication with Commission authorized staff and to the Commission's designated point of contact unless otherwise directed by the Commission.
1192	Discussion by the Contractor of any Services or Work performed under the Contract with the media, in oral presentations, in written publications, or in any other form, not related to this Contract shall be Approved in advance by the Commission.

7.24 Confidentiality

1193	The Contractor shall keep all information regarding its activities pursuant to this Contract confidential and will communicate such information only with authorized Commission personnel or Designated Representatives.

Attachment 1
Cashless Toll Zone Locations

Toll Zone Types

For the purpose of developing cost estimates for roadside equipment, it is important to understand physical layout of the future Cashless Tolling System. Specifically, the number of lanes and shoulders, as well as the type of toll zone (gantry structure or spaceframe structure) being implemented will be important to the cost estimates.

Shoulders of 8 feet or greater were considered full shoulders and will, thereby, be fully equipped. Table 1 describes the toll zone types found across the system.

Table 2 describes the location and type for the two toll zones which will be constructed on the baseline scope facility (Findlay Connector/Southern Beltway).

Toll zone layouts have not been developed for the optional facilities (Mainline , Northeastern Extension, Beaver Valley Expressway, Amos. K. Hutchinson Bypass and Mon-Fayette Expressway). Therefore, cost estimates are requested for each toll zone type so that costs may be fully developed in coordination with the design of these facilities.

Table 1: Summary of Toll Zone Types

Toll Zone Type	Description	Existing Lane Configuration (lanes+full shoulder+partial shoulder)
Zone Type 1 (Z 1)	Mainline Gantry with Maintenance from Above	(3+1+1)
Zone Type 2 (Z 2)	Mainline Gantry with Maintenance from Above	(3+2+0)
Zone Type 3 (Z 3)	Mainline Gantry with Maintenance from Above	(2+1+1)
Zone Type 4 (Z 4)	Mainline Gantry with Maintenance from Above	(2+2+0)
Zone Type 5 (Z 5)	Spaceframe with Maintenance from Below	(2+1+1)
Zone Type 6 (Z 6)	Spaceframe with Maintenance from Below	(3+1+1)

Table 2: Toll Zone Details for Southern Beltway/Findlay Connector

Location	Toll Zone Type
Findlay Connector MP 2.6	Zone Type 5
Southern Beltway Station 438+00	Zone Type 5
Southern Beltway Station 840+00	Zone Type 5

Attachment 2
Cashless Tolling Installation Responsibility Matrix

Legend:

A = Primary Responsibility - The identified party has the primary responsibility for completion of the item.

B = Support / Coordination -The identified party provides either support or coordination to assist the primary responsible party with successful completion of the item.

C = Limited/Minimum Responsibility - The identified party provides limited action for the item.

1 = Design

2 = Purchase Materials/ Equipment

3 = Installation and/or Construction

#	Element / Task / Component / Sub-System Description	Toll System "Contractor"			PTC			Civil Contractor			Civil Designer			Comments and Other Responsibilities / Information
		1	2	3	1	2	3	1	2	3	1	2	3	
1.	Overhead Structures/Toll Gantries	B	C	B	B	B	B	C	A	A	A	B	B	Civil Designer will design overhead structures/toll gantries based on known toll system requirements, toll system proposals and future needs. Upon Contract award Contractor shall review and approve Civil Designer and Civil Contractor shop drawings related to toll equipment. Civil Contractor will furnish and install the overhead structures/toll gantries including the drop down and retractable mounting arms and support plates mounted to the gantry. Contractor shall design, furnish and install mounting brackets and hardware as described in item 4 from mounting demarcation point to attach the Toll System equipment to the arms and support plates, and shall provide shop drawings for Civil Designer and PTC approval prior to installation. (See Attachment 6 – Installation Demarcation Diagram).
2.	Toll Lanes Pavement/Roadway Infrastructure	B	C	B	B	C	B	C	A	A	A	C	C	Civil Designer will design roadway infrastructure based on known toll system requirements, toll system proposals and future needs. Upon Contract award Contractor shall review and approve Civil Designer and Civil Contractor shop drawings related to roadway. Civil Contractor to furnish and install roadway infrastructure up to and including demarcation points of the pavement, conduits and related roadway junction boxes (see Attachment 6 – Installation Demarcation Diagram). The Contractor approves the pavement design to ensure that the design will support the toll system, inspects and signs off on riser prior to asphalt overlay. The Contractor will be responsible for the installation of all in-lane sensors that will be imbedded into the pavement, including but not limited to loops and treadles. The Contractor will be responsible for sealing and patching any work they perform in the pavement. (i.e. saw cuts).
3.	Toll Locations	B	n/a	n/a	B	n/a	n/a	C	n/a	n/a	A	n/a	n/a	Civil Designer to locate toll zone locations based on PTC and AVI vendor requirements; known toll system requirements; toll system proposals, and future needs. Contractor shall provide support, as applicable, after Contract award has occurred.
4.	Mounting Hardware and Materials for Toll System Installation	A	A	A	B	B	B	C	C	B	B	C	B	Contractor shall design, furnish and install all mounting brackets, hardware and provide materials (e.g., loop wire, sealant), and all Toll System equipment from the point of mounting demarcation on the cashless tolling structures, from the designated demarcation point/junction box within the roadway, and within the shelters from the shelter demarcation point (see Attachment 6 – Installation Demarcation Diagram). The Civil Designer and Civil Contractor will incorporate equipment specific brackets into the design package.
5.	Roadside Toll System Equipment, excluding AVI	A	A	A	B	B	B	C	C	B	B	C	B	Contractor shall design, furnish and install all Toll System equipment to meet the requirements of the Contract, excluding AVI, which is covered under item 7.

#	Element / Task / Component / Sub-System Description	Toll System "Contractor"			PTC			Civil Contractor			Civil Designer			Comments and Other Responsibilities / Information
		1	2	3	1	2	3	1	2	3	1	2	3	
6.	Toll System Equipment within the Toll Equipment Building (TEB)	A	A	A	B	B	B	C	C	B	B	C	B	Contractor shall design, furnish and install all Toll System equipment located within the TEB(s) to meet the requirements of the Contract. This includes but not limited to zone controllers, facility servers (if necessary), and image servers (if necessary).
7.	AVI Antennas and Readers, Mounting Hardware	A	B	A	B	A	B	C	C	B	B	C	B	PTC shall procure and Contractor shall take delivery and install the approved E-ZPass AVI equipment per the quantity identified by the Contractor's design to satisfy the Toll System requirements specified.
8.	Signage, Sign Supports, and Mounting	C	C	C	B	B	B	C	A	A	A	B	B	Civil Designer will design signs. Civil Contractor will be responsible for all signage procurement and installation related activities.
9.	Roadside Toll Equipment Building	B	C	B	B	B	B	C	A	A	A	B	B	Civil Designer will design toll equipment buildings and Civil Contractor will furnish and install toll equipment buildings. Contractor will provide space and power requirements as well as environmental considerations for all Contractor provided equipment housed inside the toll equipment building. The Contractor will review and approve designs and shall install equipment racks within the shelter to house the toll system servers and components.
10.	Back-up Generator	B	C	C	B	B	B	C	A	A	A	B	B	Civil Designer will specify roadside generator. Civil Contractor will furnish and install generators. Contractor and PTC to provide power requirements at each generator location for the toll system and ITS equipment.
11.	Toll System Equipment Racks within Toll Equipment Building	A	A	A	B	B	B	C	C	B	B	B	B	Contractor shall design, furnish and install equipment racks for LAN and toll equipment within the toll equipment building, including equipment layout design; power supplies, mounting materials, raceways, and wiring and conduit from toll equipment building demarcation points for power and communications and shall provide shop drawings for Civil Designer and PTC approval prior to installation. (see Attachment 6– Installation Demarcation Diagram)
12.	PTC WAN and ITS Equipment Racks within Toll Equipment Building	B	C	C	A	A	A	C	C	B	B	B	B	PTC shall design, furnish and install equipment racks for WAN and ITS equipment within the toll equipment building, including equipment layout design; power supplies, mounting materials, raceways, and wiring and conduit from toll equipment building demarcation points for power and communications and shall provide shop drawings for Civil Designer prior to installation.
13.	Power from Point of Service to Toll Equipment Building	B	C	B	B	B	B	C	A	A	A	B	B	Civil Designer will design power infrastructure based on known toll system requirements, toll system proposals and future needs. Upon Contract award Contractor shall review and approve Civil Designer and Civil Contractor shop drawings related to power requirements. Civil Contractor shall be responsible for providing the prime power and the electrical connectivity (including conduit and panels) between the point of service and the toll equipment buildings. Civil Contractor will also be responsible for stub out of conduits to demarcation points in the toll equipment building. (see Attachment 6 – Installation Demarcation Diagram) The Contractor will provide specific power requirements for the toll system and provide specifications for any utility clearances in the vicinity of the toll system equipment.
14.	Toll System equipment conduits or ducts and junction/pull boxes from TEB to demarcation point on the overhead structures/toll gantries	B	C	B	B	B	B	C	A	A	A	B	B	Civil Designer will design and Civil Contractor will furnish and install conduits, ducts and junction boxes and other related power infrastructure based on known toll system requirements, Cashless Tolling System proposals and future needs from the TEB to a pre-defined demarcation point (see Attachment 6 – Installation Demarcation Diagram). Upon contract award Contractor shall review and approve Civil design and Civil Contractor shop drawings related to this infrastructure. The Contractor will be responsible to pull Toll System cables and wires as described in #16 to the equipment racks. (see Attachment 6 – Installation Demarcation Diagram)

#	Element / Task / Component / Sub-System Description	Toll System "Contractor"			PTC			Civil Contractor			Civil Designer			Comments and Other Responsibilities / Information
		1	2	3	1	2	3	1	2	3	1	2	3	
15.	Conduit From Demarcation point(s) to Toll Equipment	A	A	A	B	B	B	B	B	B	B	B	B	The Contractor will furnish and install above grade conduits, ducts and junction boxes and other related power infrastructure based on the Toll System requirements beyond the pre-defined demarcation points to complete the connections to their toll equipment. (see Attachment 6 – Installation Demarcation Diagram)
16.	Toll System Equipment Cable and Wiring	A	A	A	B	B	B	C	C	B	B	C	B	The Contractor shall design, furnish and install all cables and wiring required (including but not limited to power and data/network) to fully connect and operate the Toll System from the point of power supplied by the Civil Contractor and the WAN equipment provided by PTC. The Contractor will be responsible for all cables and wiring to connect the Toll System equipment to the toll equipment racks in the TEB (see Attachment 6– Installation Demarcation Diagram).
17.	Toll System Design/Installation Drawings	A	n/a	n/a	B	n/a	n/a	B	n/a	n/a	B	n/a	n/a	The Contractor shall provide all design drawings and documentation required for the installation of the Toll System to the Civil Designer and shall review and approve Civil Designer's design and Civil Contractor shop drawings with regard to the Toll System.
18.	Toll System Network Equipment (LAN)	A	A	A	B	B	B	C	C	B	B	C	B	The Contractor shall design, and furnish all Toll System network equipment per specification and install all LAN network devices to interconnect with the appropriate PTC installed network equipment in the toll equipment buildings (see Attachment 3b – Network Responsibility Diagram). The Contractor will be responsible to manage and monitor all LAN equipment after the PTC provided firewall. It will be the responsibility of the Contractor and PTC to coordinate and develop the connection(s). The Contractor is responsible for verifying the connectivity between Cashless Toll Host System(s) and the In-Lane System(s).
19.	WAN Network Equipment	B	C	B	A	A	A	C	C	B	B	C	B	The PTC shall design, furnish and install ALL network equipment and WAN devices to provide network connectivity to the shelter(s) (see Attachment 3b – Network Responsibility Diagram), the Turnpike Industrial Park (TIP) and Western Regional Office (WRO). It will be the shared responsibility of the Contractor and PTC to coordinate and develop the connection(s).
20.	Facility Servers	A	A	A	B	B	B	C	C	C	C	C	C	The Contractor shall furnish and install all facility servers, storage devices, and other required processing components as required in the TEB/shelter.
21.	Toll System UPS – Equipment	B	C	B	B	C	B	C	A	A	A	C	C	The Civil Designer shall design and the Civil Contractor shall furnish and install UPS in the toll equipment buildings. The Contractor shall furnish and install an electronic interface to the UPS to monitor the UPS performance. The Contractor and PTC will provide power requirements at each UPS location for the Toll System and supporting ITS and WAN equipment.
22.	Maintenance and Protection of Traffic (MPT) for Toll System Installation	B	B	B	B	B	B	B	A	A	A	B	B	The Civil Designer shall design typical MPT plans for the work and the Civil Contractor shall furnish all MPT and lane closures per the Contractor schedule for Toll System equipment related installation and testing. Final detailed MPT packages shall be submitted by the Civil Designer to PTC for approval.
23.	Maintenance and Protection of Traffic for Gantry Installation and related Civil Work	C	C	C	B	B	B	C	A	A	A	B	B	The Civil Designer shall design typical MPT plans for the work and Civil Contractor shall furnish all MPT for roadway, gantry, and other civil work. Final detailed MPT packages shall be submitted by the Civil Contractor to PTC and Civil Designer for approval.
24.	Toll location design and construction permits (not related directly to Toll System equipment design or installation)	C	C	n/a	B	B	n/a	B/A	B/A	n/a	A/B	A/B	n/a	The Civil Designer and Civil Contractor will coordinate and shall be responsible for obtaining the required permits for the design, construction and installation of the civil infrastructure. This will include but not limited to all environmental and construction permits required by federal, state, and local municipalities.
25.	FCC licenses and permitting for Cashless Toll System	A	B	n/a	B	A	n/a	C	C	n/a	C	C	n/a	Contractor is responsible for preparing the required application and the Commission will obtain the required FCC licenses for all AVI equipment provided under this Scope of Work. The Commission has the FCC licenses for the existing AVI Systems.
26.	Toll System Infrastructure Installation Checkout	A	n/a	A	B	n/a	B	B	n/a	B	C	n/a	B	The Contractor shall develop an installation check-out document and procedure and shall inspect and approve all work-performed by the Civil Contractor related to the Toll System to ensure proper installation per the Contractor's requirements and design specifications. All System checkout plans shall be approved by PTC.

#	Element / Task / Component / Sub-System Description	Toll System "Contractor"			PTC			Civil Contractor			Civil Designer			Comments and Other Responsibilities / Information
		1	2	3	1	2	3	1	2	3	1	2	3	
27.	Demolition of Existing Infrastructure	B	C	B	B	B	B	C	A	A	A	C	C	The Civil Contractor will be responsible for the demolition, removal, and proper disposal of any existing infrastructure that will no longer be needed or used in the Cashless Toll System. This will include the plazas and associated equipment no longer commissioned for use.
28.	Maintenance and Protection of Traffic for demolition and existing site reconfiguration related Civil Work	C	C	C	B	B	B	C	A	A	A	B	B	The Civil Designer shall design typical MPT plans for the work and Civil Contractor shall furnish all MPT and lane closures demolition work. Final detailed MPT packages shall be submitted by the Civil Contractor to PTC and Civil Designer for approval.
29.	Fire Suppression.	C	C	C	B	B	B	B	A	A	A	B	B	The Civil Designer will be responsible for the design of the fire suppression system and the Civil Contractor shall furnish and install the necessary fire suppression equipment per the specifications.
30.	Security Access System	C	C	C	A	A	A	C	B	B	B	C	B	TPTC shall have the responsibility to design, procure, install and maintain all security and card access system equipment.
31.	DVAS Pole	B	C	B	B	B	B	C	A	A	A	B	B	Civil Designer will design the DVAS poll structure required for the mounting of the DVAS camera equipment. Upon Contract award the Contractor shall review and approve Civil Designer and Civil Contractor shop drawings related to toll equipment. Civil Contractor will furnish and install the DVAS poll structures. The Civil Contractor will be responsible for providing conduit(s) and power from the TEB to the pole. Contractor shall design, furnish and install mountings from mounting demarcation point as described in item 4, and shall provide shop drawings for Civil Designer and PTC approval prior to installation. The Contractor shall be responsible to mount the cameras to the pole and pull all cables and wires from the pole to the TEB.
32.	Cashless Toll Host System Servers	A	A	A	B	B	B	C	C	C	C	C	C	The Contractor shall specify, design, purchase, and install all host servers, storage devices, and other required processing components as required in the primary and secondary Cashless Toll Host locations. The contractor will be responsible for installing and configuring all software databases, security software, and the Cashless Toll Host Application Software and Databases according to PTC provided requirements. The Contractor will be responsible for all LAN networking equipment up to the PTC provided firewall (see Attachment 3b – Network Responsibility Diagram),

Attachment 3A
Existing PTC Communications System Architecture

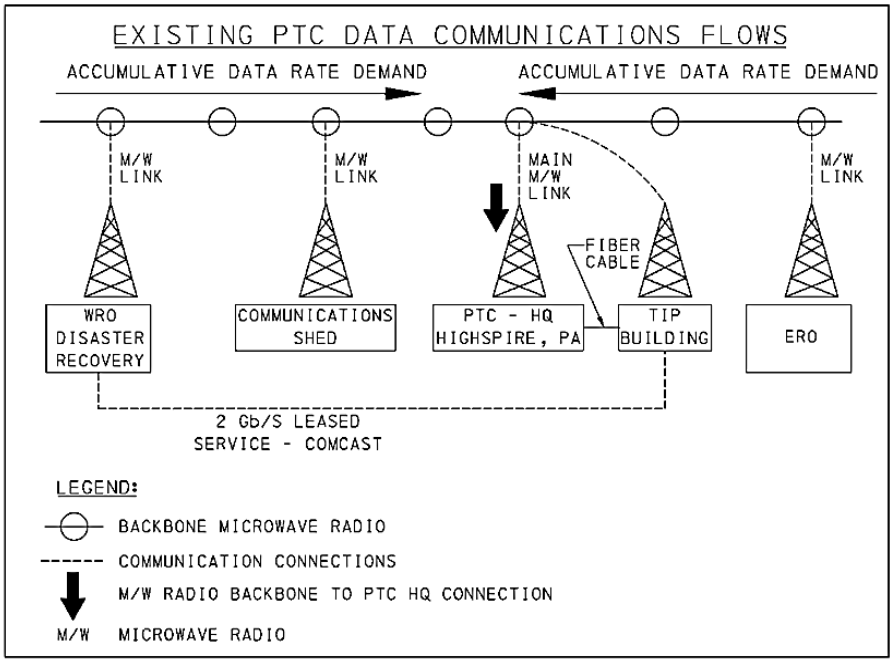
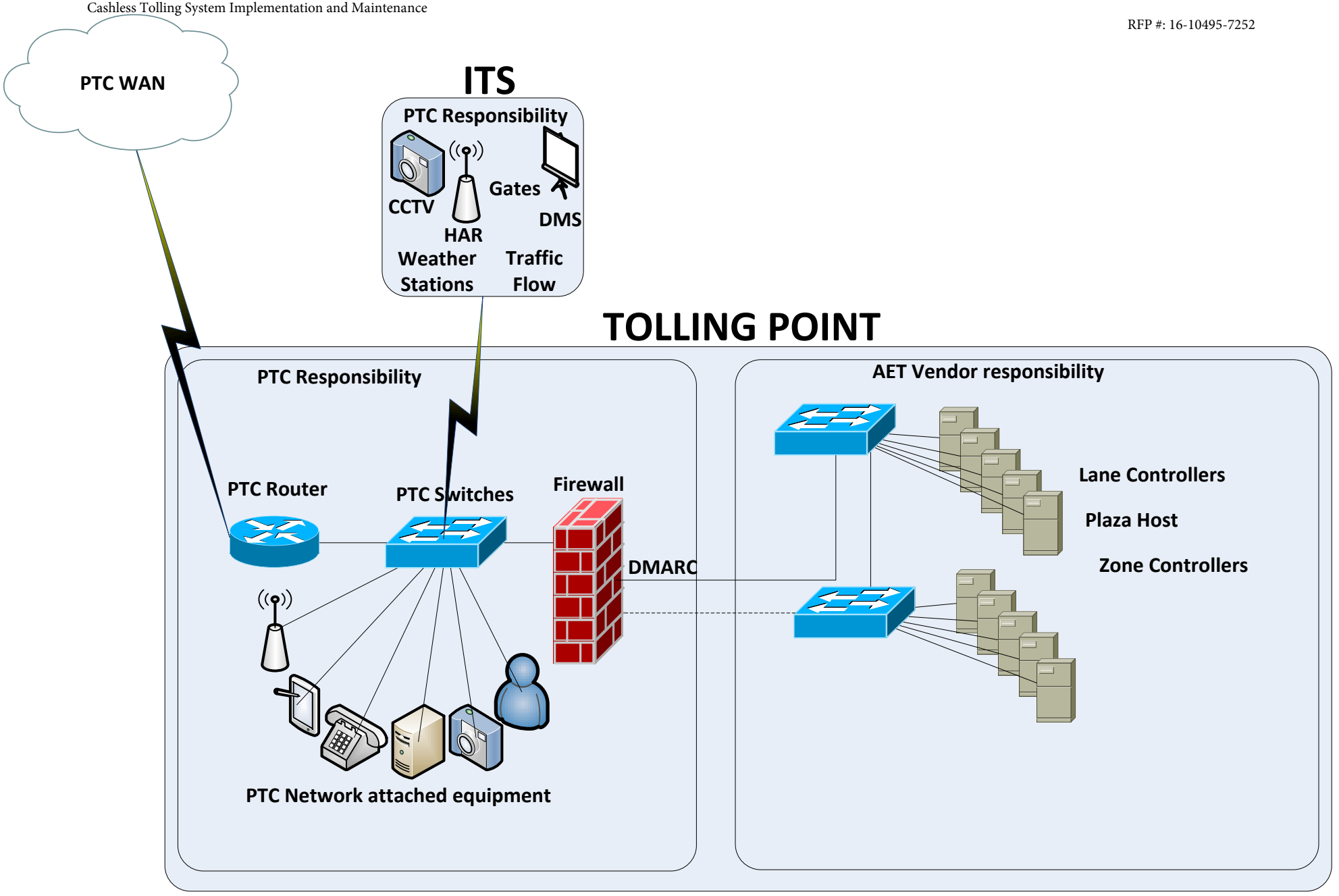


Figure 1: Existing PTC Data Communications Flows

Attachment 3B
PTC Communications Network Responsibilities



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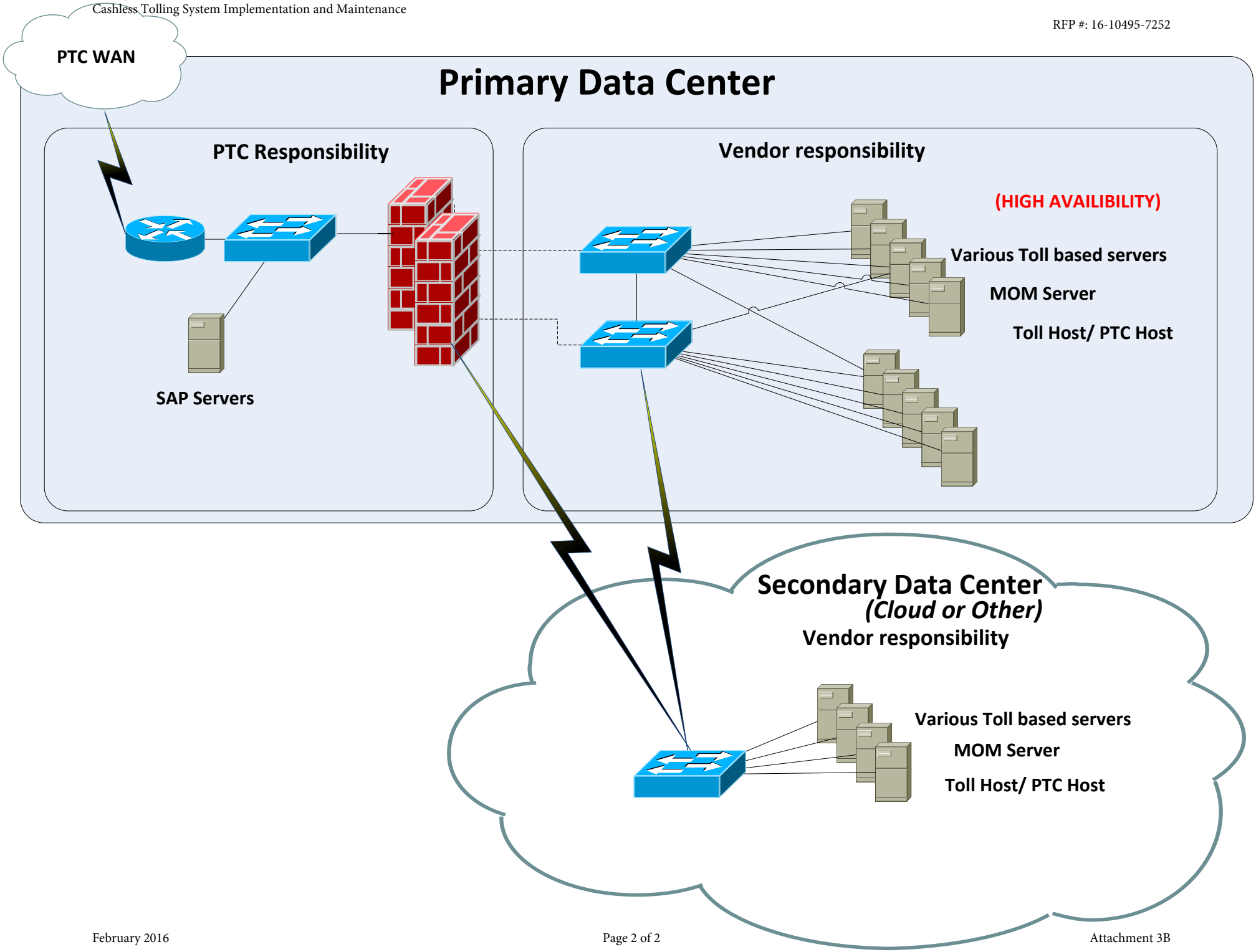
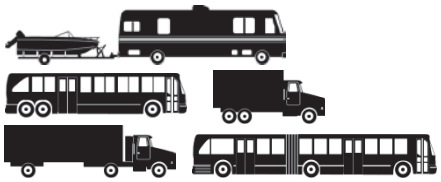
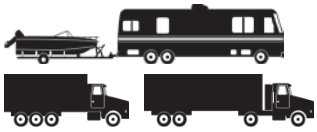
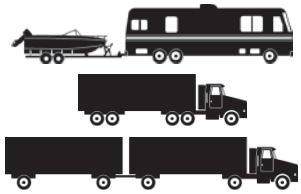
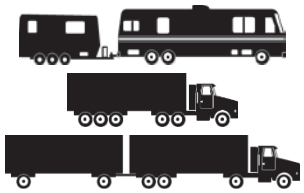

PTC WAN
Primary Data Center
PTC Responsibility
SAP Servers
Vendor responsibility
(HIGH AVAILIBILITY)
Various Toll based servers
MOM Server
Toll Host/ PTC Host
Secondary Data Center
(Cloud or Other)
Vendor responsibility
Various Toll based servers
MOM Server
Toll Host/ PTC Host

Attachment 4A
PTC Proposed AVC Class Structure and Silhouette

Number	Name	Description	
1	2 axle, low profile	Car (2-axle: motorcycle, sport utility, minivan, van, pick-up)	
2	3 axle, low profile	Class 1 with 1-axle trailer	
3	4 axle, low profile	Class 1 with 2-axle trailer	
4	5 axle, low profile	Class 1 with 3-axle trailer	
5	6+ axle, low profile	Class 1 with 4+ axle trailer	
6	2 axle, high profile 2 axle, high profile 2 axle, high profile 2 axle, high profile	2-axle motor home 2-axle transit bus 2-axle conventional school bus 2-axle single unit truck	
7	3 axle, high profile 3 axle, high profile 3 axle, high profile 3 axle, high profile 3 axle, high profile	3-axle motor home/trailer combination 3-axle coach bus (i.e. intercity bus) 3-axle single unit truck 3-axle single trailer truck 3-axle articulated bus	
8	4 axle, high profile 4 axle, high profile 4 axle, high profile	4-axle motor home/trailer combination 4-axle single unit truck 4-axle single trailer truck	
9	5 axle, high profile 5 axle, high profile 5 axle, high profile	5-axle motor home/trailer combination 5-axle single trailer truck 5-axle multi-trailer truck	
10	6 axle, high profile 6 axle, high profile 6 axle, high profile	6-axle motor home/trailer combination 6+ axle single unit truck 6-axle multi-trailer truck	
11	7+ axle, high profile 7+ axle, high profile	7+ axle motor home/trailer combination 7+ axle multi-trailer truck	

PTC Proposed AVC Class Structure

Attachment 4B
E-ZPass Group Mapped Classes

Attachment 4B - E-ZPass Group Mapped Classes

	Vehicle Type	Axles	Num. Tires	Dual Tires	Over 7,000 lbs.	IAG Class	Corresponding PTC Vehicle Class	
							PTC Existing Class Structure	PTC (proposed) Axle + Dimension
Automobile/ Sport Utility (with possible trailer)	1	2	4	N	N	72	1	1
	1	3	6	N	N	76	2	2
	1	4	8	N	N	**80**	2	3
	1	5	10	N	N	**84**	2	4
Motorcycle (with possible sidecar or trailer)	2	2	2	N	N	136	1	1
	2	3	3	N	N	**140**	1	2
	2	4	>3	N	N	**144**	1	3
Pick-Up Truck (with possible trailer)	3	2	4	N	N	200	1	1
	3	2	4	N	Y	202	1	1
	3	2	6	Y	N	201	1	1
	3	2	6	Y	Y	203	1	1
	3	3	6	N	N	204	2	2
	3	3	6	N	Y	206	2	2
	3	3	>= 8	Y	N	205	2	2
	3	3	>= 8	Y	Y	207	2	2
	3	4	8	N	N	**208**	2	3
	3	4	8	N	Y	**210**	2	3
	3	4	>= 10	Y	N	**209**	2	3
	3	4	>= 10	Y	Y	**211**	2	3
	3	5	10	N	N	**212**	2	4
	3	5	10	N	Y	**214**	2	4
	3	5	>= 12	Y	N	**213**	2	4
	3	5	>= 12	Y	Y	**215**	2	4
Passenger/ Cargo Van (seating 1-9 passengers)	4	2	4	N	N	264	1	1
	4	2	4	N	Y	266	1	1
	4	2	6	Y	N	265	1	1
	4	2	6	Y	Y	267	1	1
	4	3	6	N	N	268	2	2
	4	3	6	N	Y	270	2	2
	4	3	8-10	Y	N	269	2	2
	4	3	8-10	Y	Y	271	2	2
Minibus/ Team Van/ Stretch Limo (seating 10-15 passengers)	5	2	4	N	N	328	2	1
	5	2	4	N	Y	330	2	1
	5	2	6	Y	N	329	2	1
	5	2	6	Y	Y	331	2	1
	5	3	6	N	N	332	2	2
	5	3	6	N	Y	334	2	2
	5	3	8-10	Y	N	333	2	7
	5	3	8-10	Y	Y	335	2	7
Buses (seating 16 or more passengers)	6	2	4	N	N	392	3	6
	6	2	4	N	Y	394	3	6
	6	2	6	Y	N	393	3	6
	6	2	6	Y	Y	395	3	6
	6	3	6	N	N	396	5	7
	6	3	6	N	Y	398	5	7
	6	3	8-10	Y	N	397	5	7
	6	3	8-10	Y	Y	399	5	7
	6	4	8	N	N	400	5	8
	6	4	8	N	Y	402	5	8
	6	4	>= 10	Y	N	401	5	8
	6	4	>= 10	Y	Y	403	5	8

Footnotes

[i] PTC tolls are weight based. The classes shown are those as used manually when scales are not present in the lane. Therefore, the actual class reported for a transaction may vary (values of 1 - 9) if the in-lane system determines that the actual weight of the vehicle varies from the programmed vehicle class.

	Vehicle Type	Axles	Num. Tires	Dual Tires	Over 7,000 lbs.	IAG Class	Corresponding PTC Vehicle Class	
							PTC Existing Class Structure	PTC (proposed) Axle + Dimension
Recreational Vehicle/ Motor Home	7	2	4	N	N	456	2	6
	7	2	4	N	Y	458	2	6
	7	2	6	Y	N	457	2	6
	7	2	6	Y	Y	459	2	6
	7	3	6	N	N	460	3	7
	7	3	6	N	Y	462	3	7
	7	3	8-10	Y	N	461	3	7
	7	3	8-10	Y	Y	463	3	7
	7	4	8	N	N	464	3	8
	7	4	8	N	Y	466	3	8
	7	4	>= 10	Y	N	465	3	8
	7	4	>= 10	Y	Y	467	3	8
Truck	8	2	4	N	N	520	2	6
	8	2	4	N	Y	522	2	6
	8	2	6	Y	N	521	2	6
	8	2	6	Y	Y	523	2	6
	8	3	6	N	N	524	3	7
	8	3	6	N	Y	526	3	7
	8	3	8-10	Y	N	525	3	7
	8	3	8-10	Y	Y	527	3	7
	8	4	8	N	N	528	4	8
	8	4	8	N	Y	530	4	8
	8	4	>= 10	Y	N	529	4	8
	8	4	>= 10	Y	Y	531	4	8
	8	5	10	N	N	532	5	9
	8	5	10	N	Y	534	5	9
	8	5	>= 12	Y	N	533	5	9
	8	5	>= 12	Y	Y	535	5	9
	8	6	12	N	N	536	6	10
	8	6	12	N	Y	538	6	10
	8	6	>= 14	Y	N	537	6	10
	8	6	>= 14	Y	Y	539	6	10
	8	7	14	N	N	540	6	10
	8	7	14	N	Y	542	6	10
	8	7	>= 16	Y	N	541	6	10
	8	7	>= 16	Y	Y	543	6	10
Auto Transporter (up to 65')	9	3	n/a	Y	Y	591	4	7
	9	4	n/a	Y	Y	595	4	8
	9	5	n/a	Y	Y	599	5	9
	9	6	n/a	Y	Y	603	5	10
	9	7	n/a	Y	Y	607	5	11
Auto Transporter (over 65')	10	4	n/a	Y	Y	659	4	8
	10	5	n/a	Y	Y	663	5	9
	10	6	n/a	Y	Y	667	5	10
	10	7	n/a	Y	Y	671	5	11

Footnotes

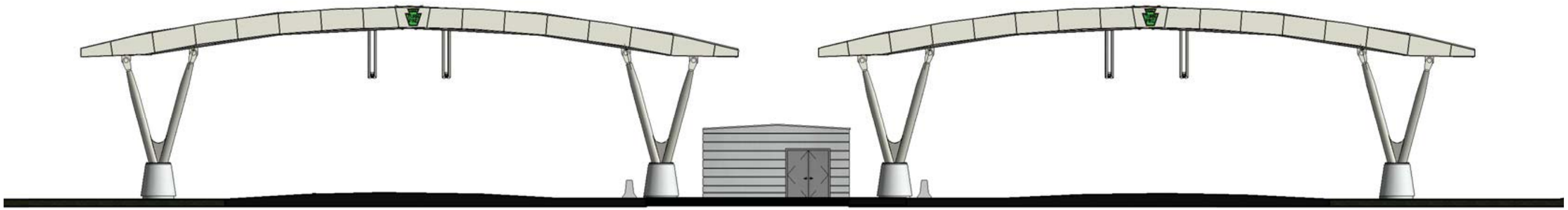
[i] PTC tolls are weight based. The classes shown are those as used manually when scales are not present in the lane. Therefore, the actual class reported for a transaction may vary (values of 1 - 9) if the in-lane system determines that the actual weight of the vehicle varies from the programmed vehicle class.

	Vehicle Type	Axles	Num. Tires	Dual Tires	Over 7,000 lbs.	IAG Class	Corresponding PTC Vehicle Class	
							PTC Existing Class Structure	PTC (proposed) Axle + Dimension
Tractor Trailer Combination (trailer <= 48')	11	3	n/a	Y	Y	719	5	7
	11	4	n/a	Y	Y	723	5	8
	11	5	n/a	Y	Y	727	5	9
	11	6	n/a	Y	Y	731	5	10
	11	7	n/a	Y	Y	735	5	11
Tractor Trailer Combination (trailer > 48')	12	3	n/a	Y	Y	783	5	7
	12	4	n/a	Y	Y	787	5	8
	12	5	n/a	Y	Y	791	5	9
	12	6	n/a	Y	Y	795	5	10
	12	7	n/a	Y	Y	799	5	11
Tandem Trailer Combination (each trailer <= 28.5')	13	5	n/a	Y	Y	855	6	9
	13	6	n/a	Y	Y	859	6	10
	13	7	n/a	Y	Y	863	6	11
	13	8	n/a	Y	Y	867	6	11
	13	9	n/a	Y	Y	871	6	11
	13	10	n/a	Y	Y	875	6	11
Tandem Trailer Combination (each trailer > 28.5')	14	5	n/a	Y	Y	919	6	9
	14	6	n/a	Y	Y	923	6	10
	14	7	n/a	Y	Y	927	6	11
	14	8	n/a	Y	Y	931	6	11
	14	9	n/a	Y	Y	935	6	11
	14	10	n/a	Y	Y	939	6	11
Tandem Trailer Combination (one trailer <= 28.5' other > 28.5')	15	5	n/a	Y	Y	983	6	9
	15	6	n/a	Y	Y	987	6	10
	15	7	n/a	Y	Y	991	6	11
	15	8	n/a	Y	Y	995	6	11
	15	9	n/a	Y	Y	999	6	11
	15	10	n/a	Y	Y	1003	6	11
Tractor/ Mobile Home Combination	17	3	n/a	Y	Y	1103	4	7
	17	4	n/a	Y	Y	1107	4	8
	17	5	n/a	Y	Y	1111	5	9
	17	6	n/a	Y	Y	1115	5	10
	17	7	n/a	Y	Y	1119	5	11
	17	8	n/a	Y	Y	1123	5	11
	17	9	n/a	Y	Y	1127	5	11
	17	10	n/a	Y	Y	1131	5	11

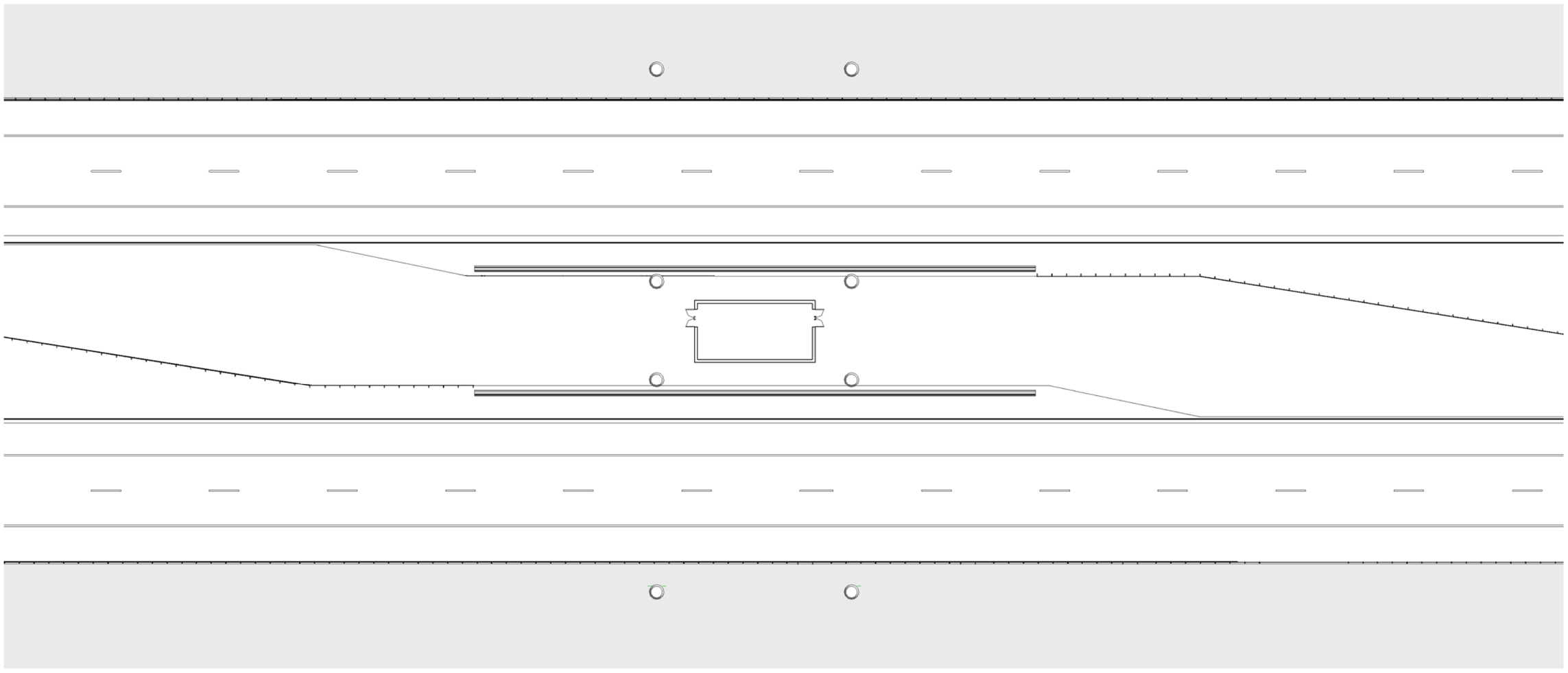
Footnotes

[i] PTC tolls are weight based. The classes shown are those as used manually when scales are not present in the lane. Therefore, the actual class reported for a transaction may vary (values of 1 - 9) if the in-lane system determines that the actual weight of the vehicle varies from the programmed vehicle class.

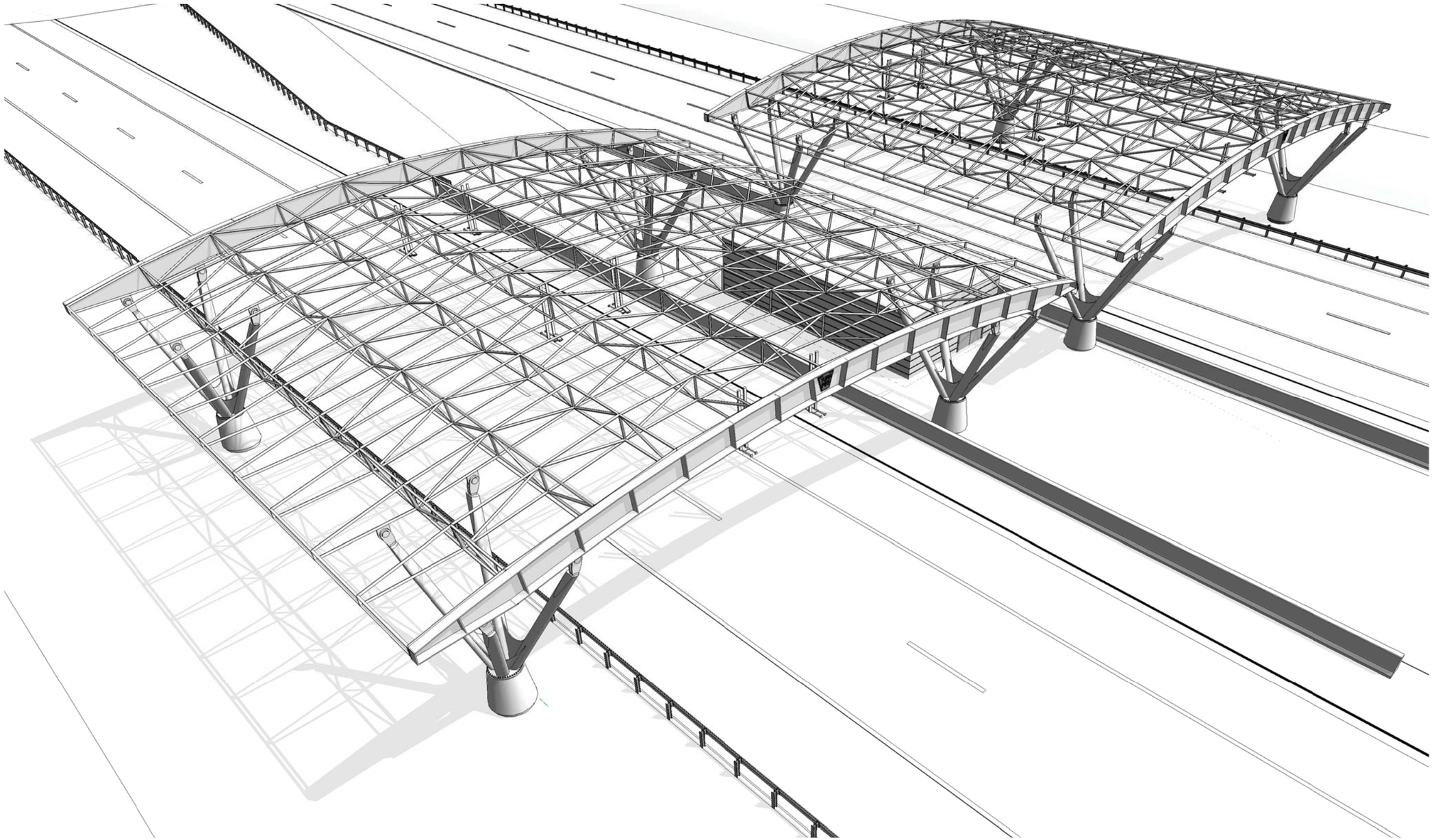
Attachment 5
Concept Plans for Overhead Structures/Toll Gantries



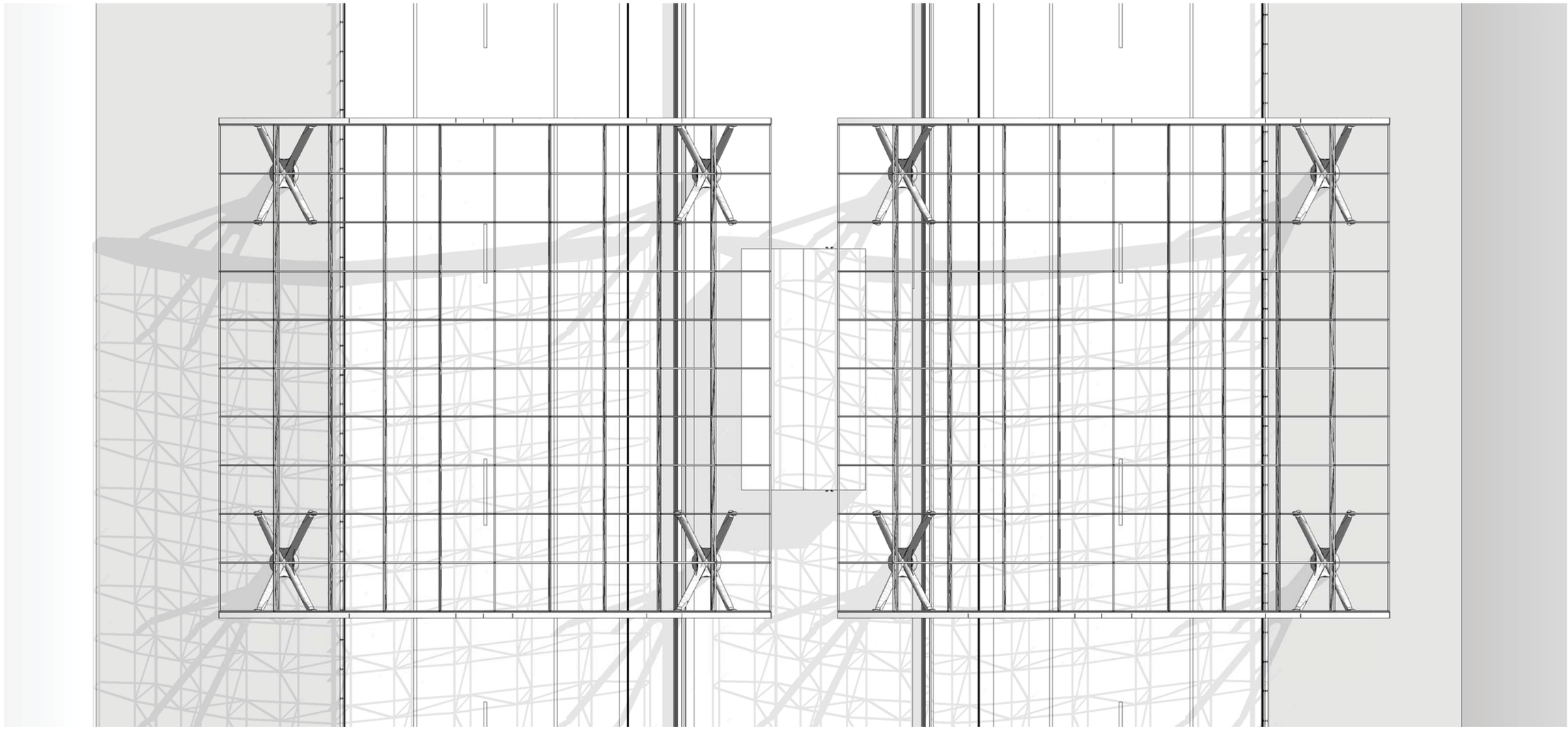
PTC Southern Beltway Space Frame Concept - Elevation View



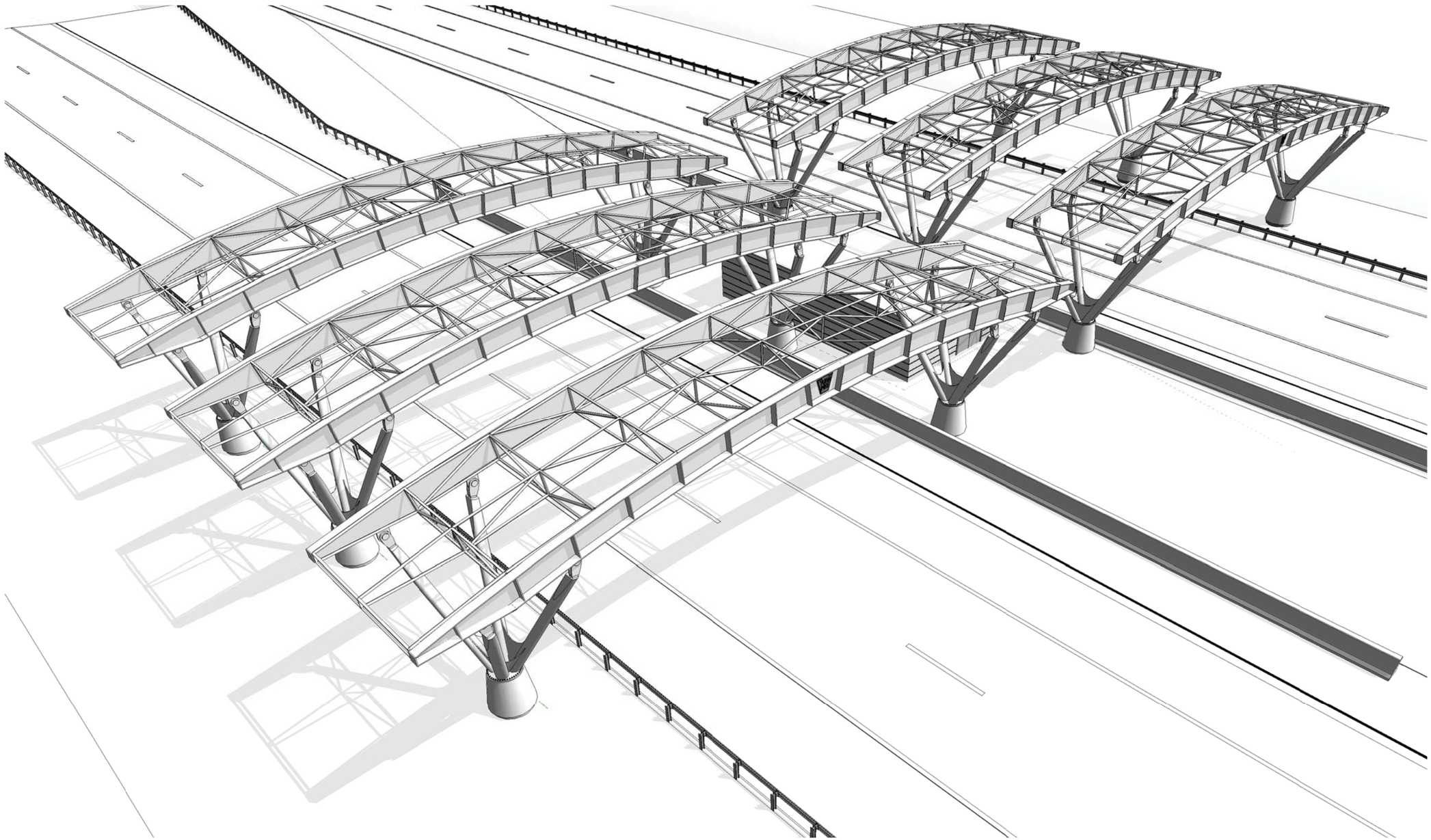
PTC Southern Beltway Space Frame Concept - Plan View



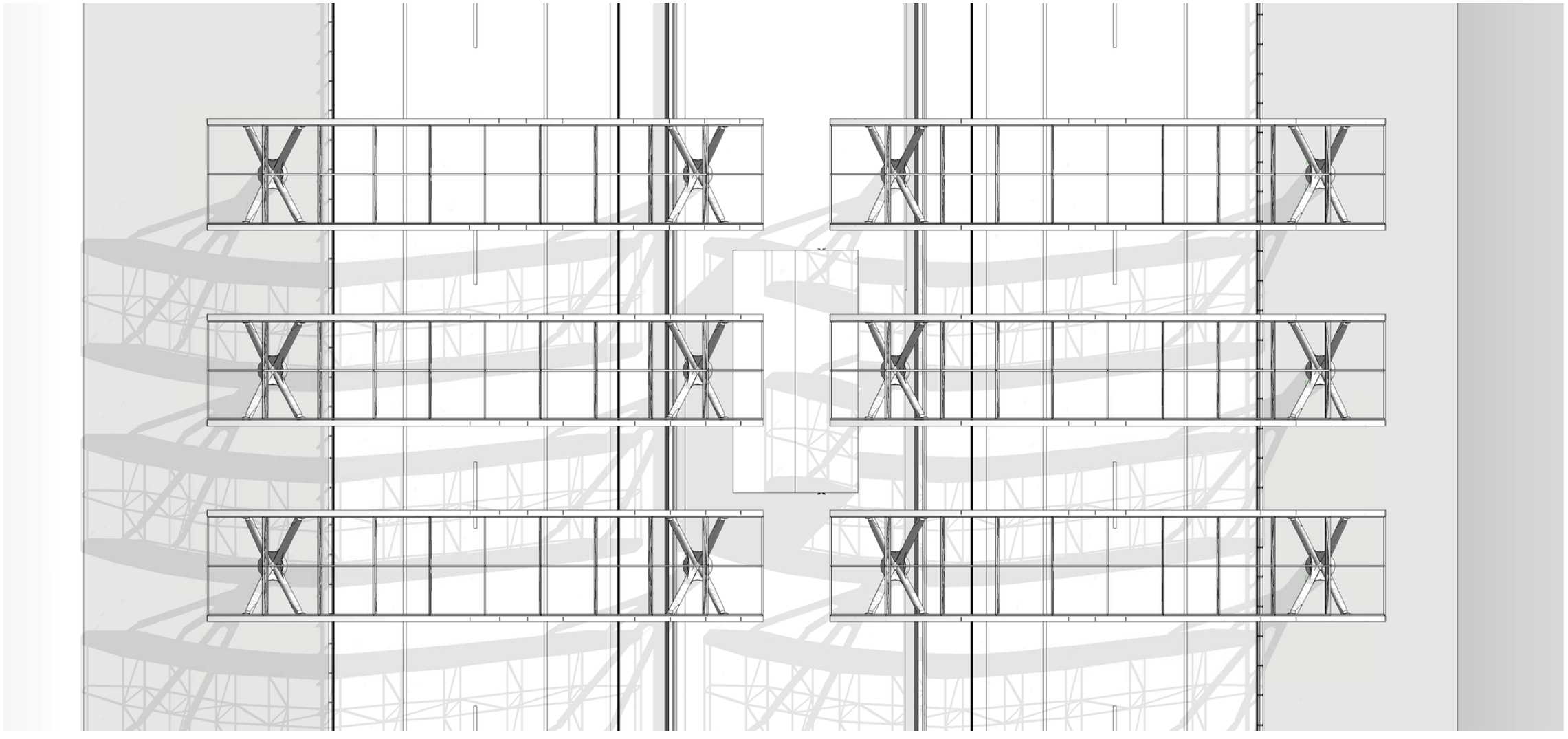
PTC Southern Beltway Full Space Frame Concept



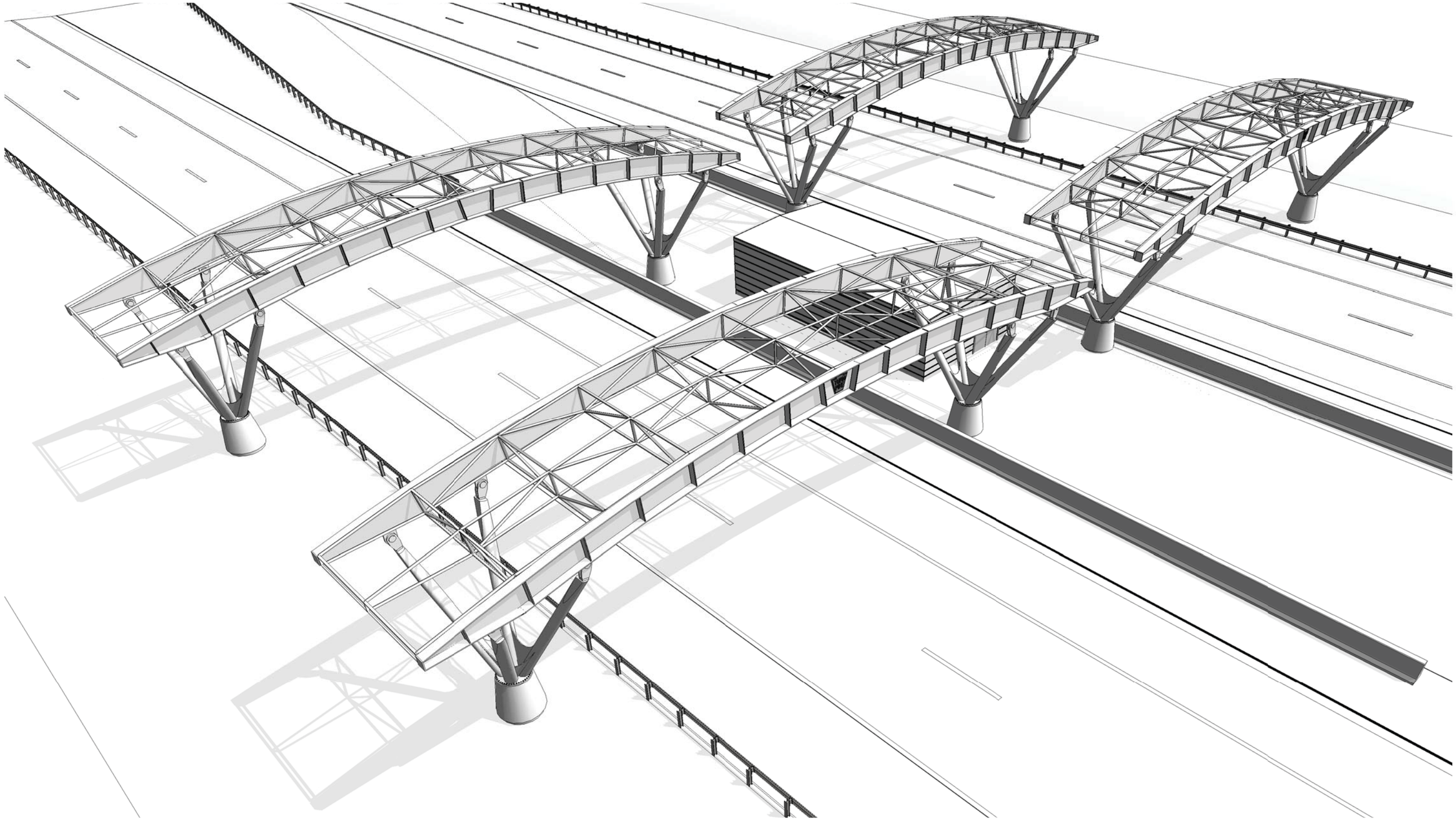
PTC Southern Beltway Full Space Frame Concept - Plan View



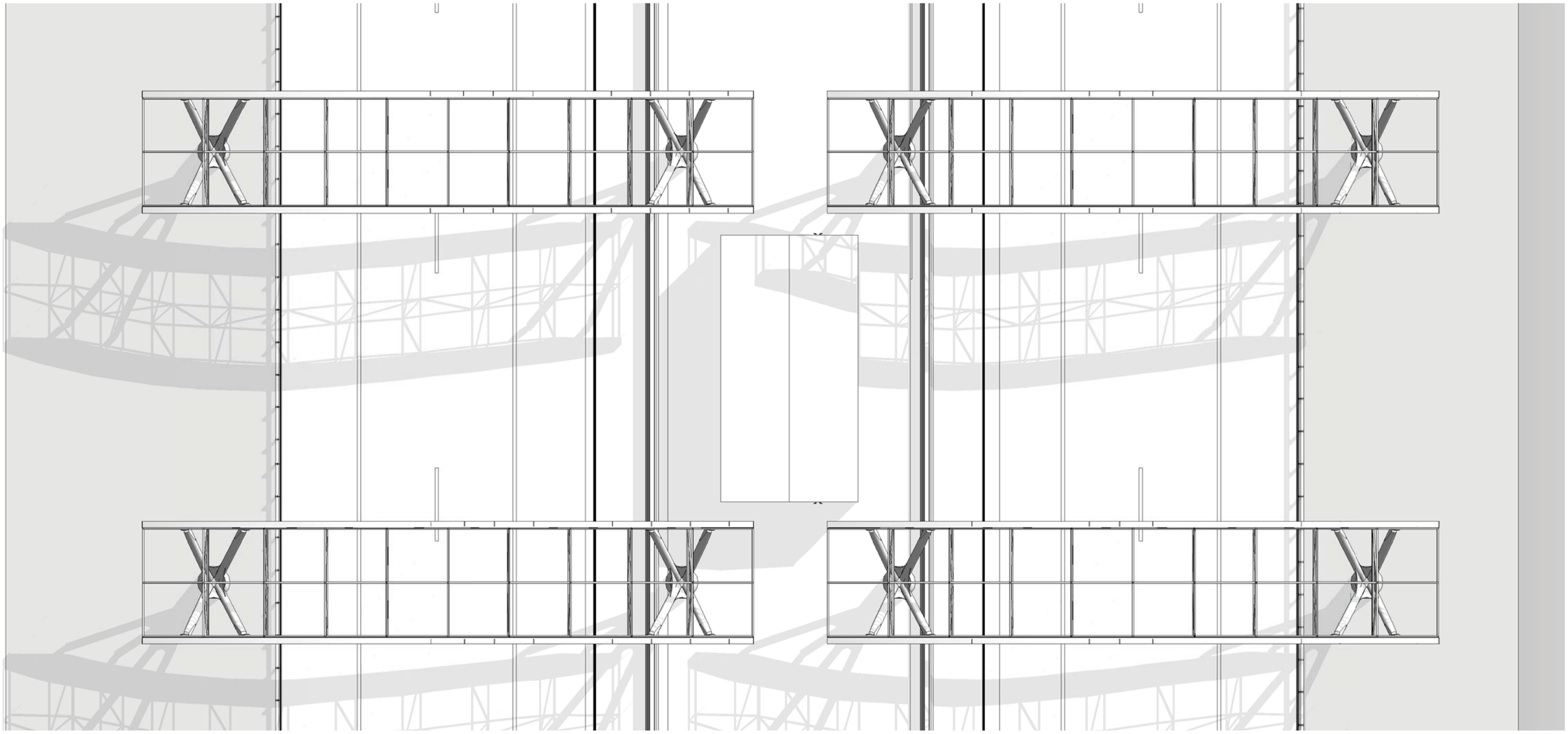
PTC Southern Beltway Triple Space Frame Concept



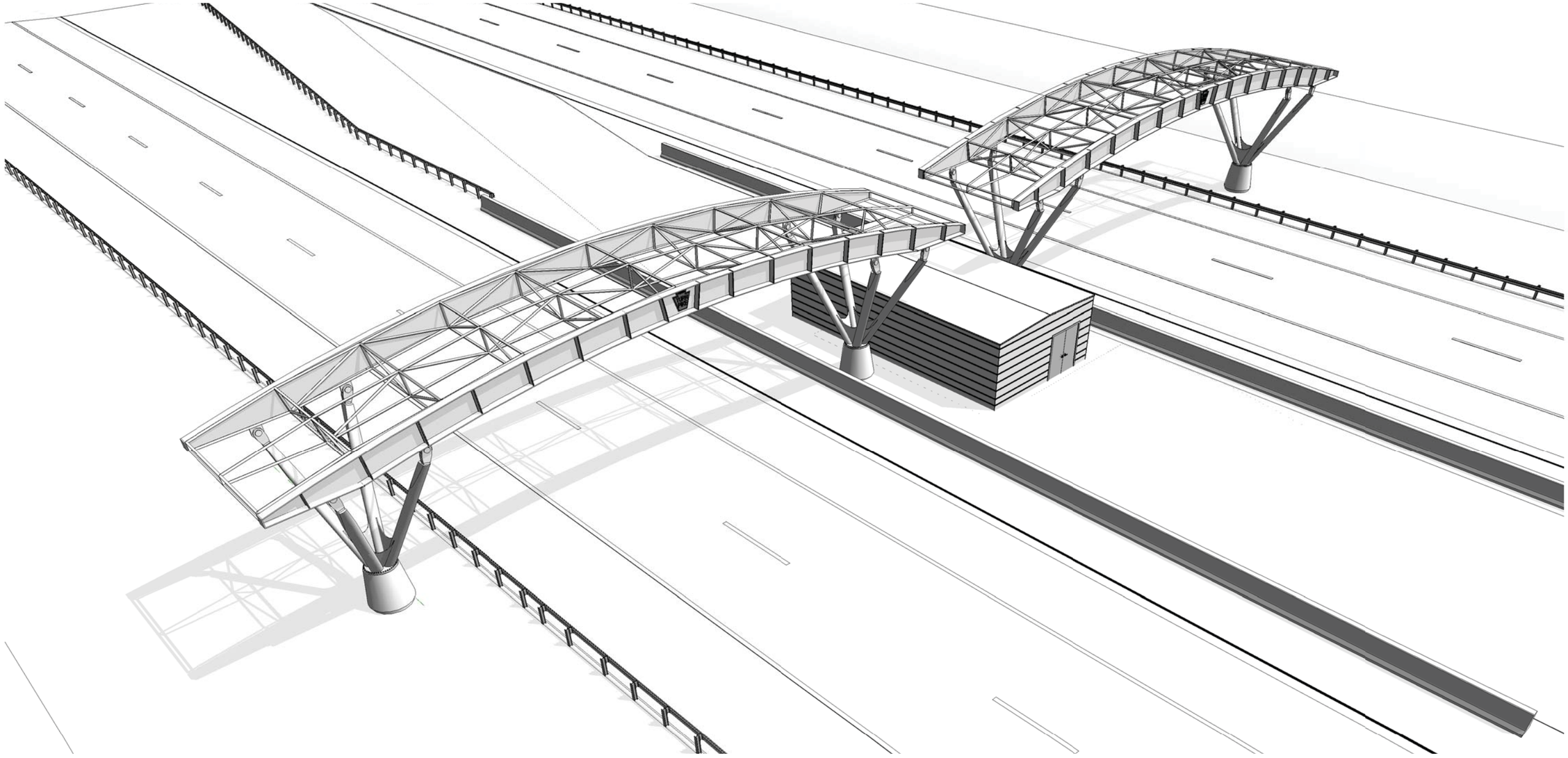
PTC Southern Beltway Triple Space Frame Concept - Plan View



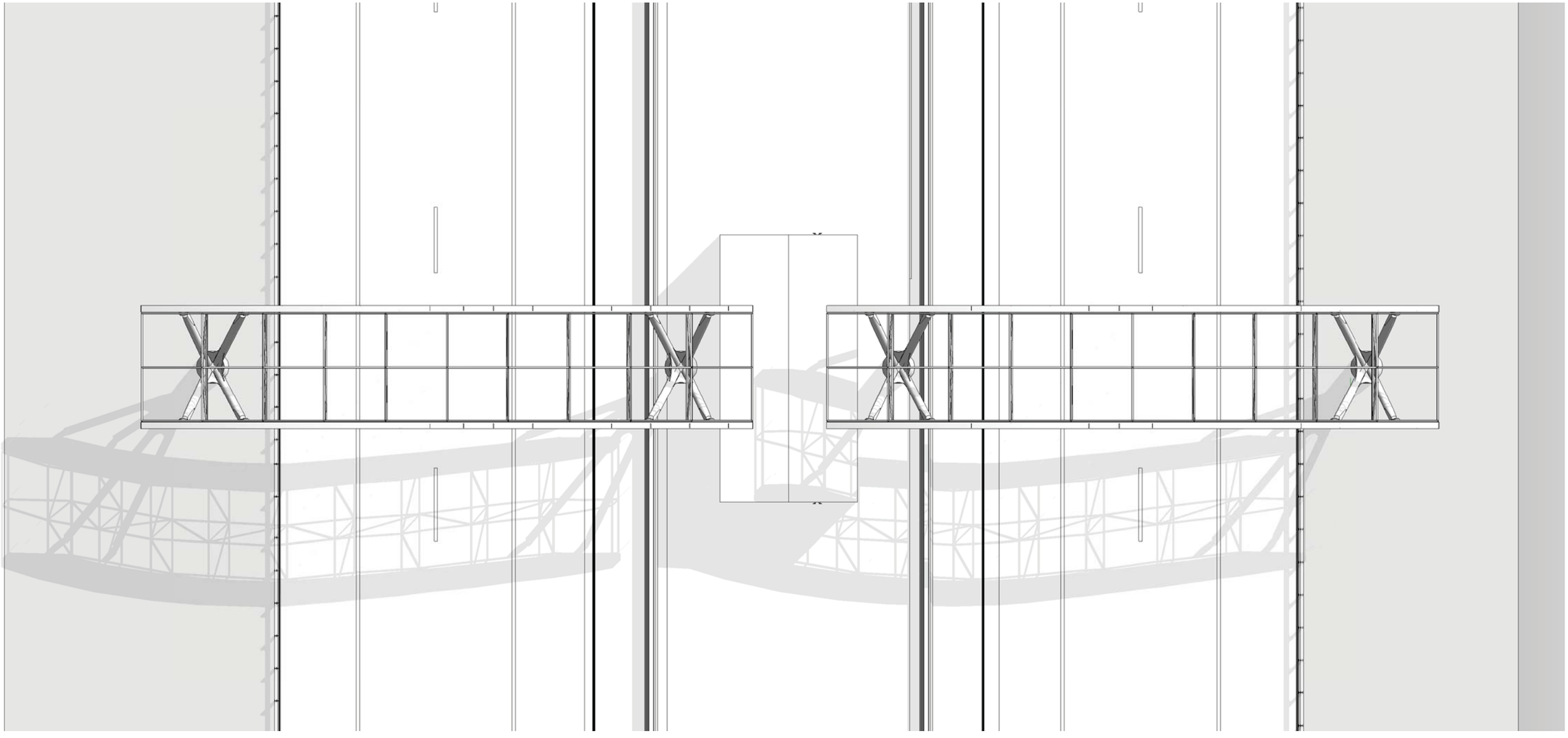
PTC Southern Beltway Double Space Frame Concept



PTC Southern Beltway Double Space Frame Concept - Plan View

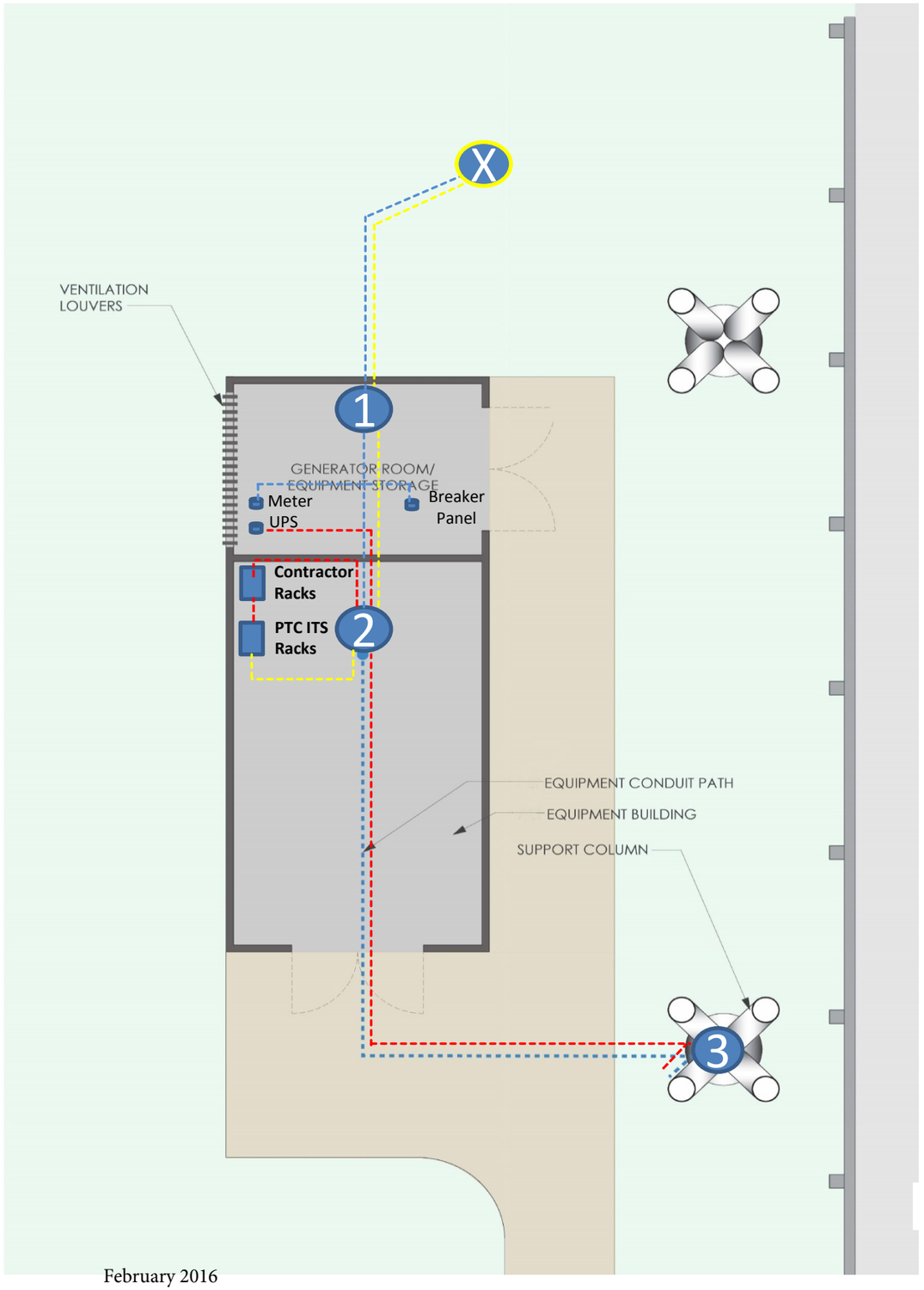


PTC Southern Beltway Single Space Frame Concept



PTC Southern Beltway Single Space Frame Concept - Plan View

Attachment 6
Installation Demarcation Diagram



Toll Equipment Building (TEB) Demarcation Points
Maintenance from Below Option

Utilities:

- Power from point of service to TEB point X by **Civil Contractor**.
- Network connectivity from point of service to TEB point X by **Civil Contractor/PTC**.

Conduit Installation:

- Conduit from point of service to TEB point X by **Civil Contractor**.
- Conduit from point X to generator room point #1 by **Civil Contractor**.
- Conduit from generator room point #1 to equipment room point #2 by **Civil Contractor**.
- Conduit from equipment room point #2 to toll gantry point #3 by **Civil Contractor**.
- Conduit from point #2 to toll equipment racks in toll equipment room by **Contractor**.

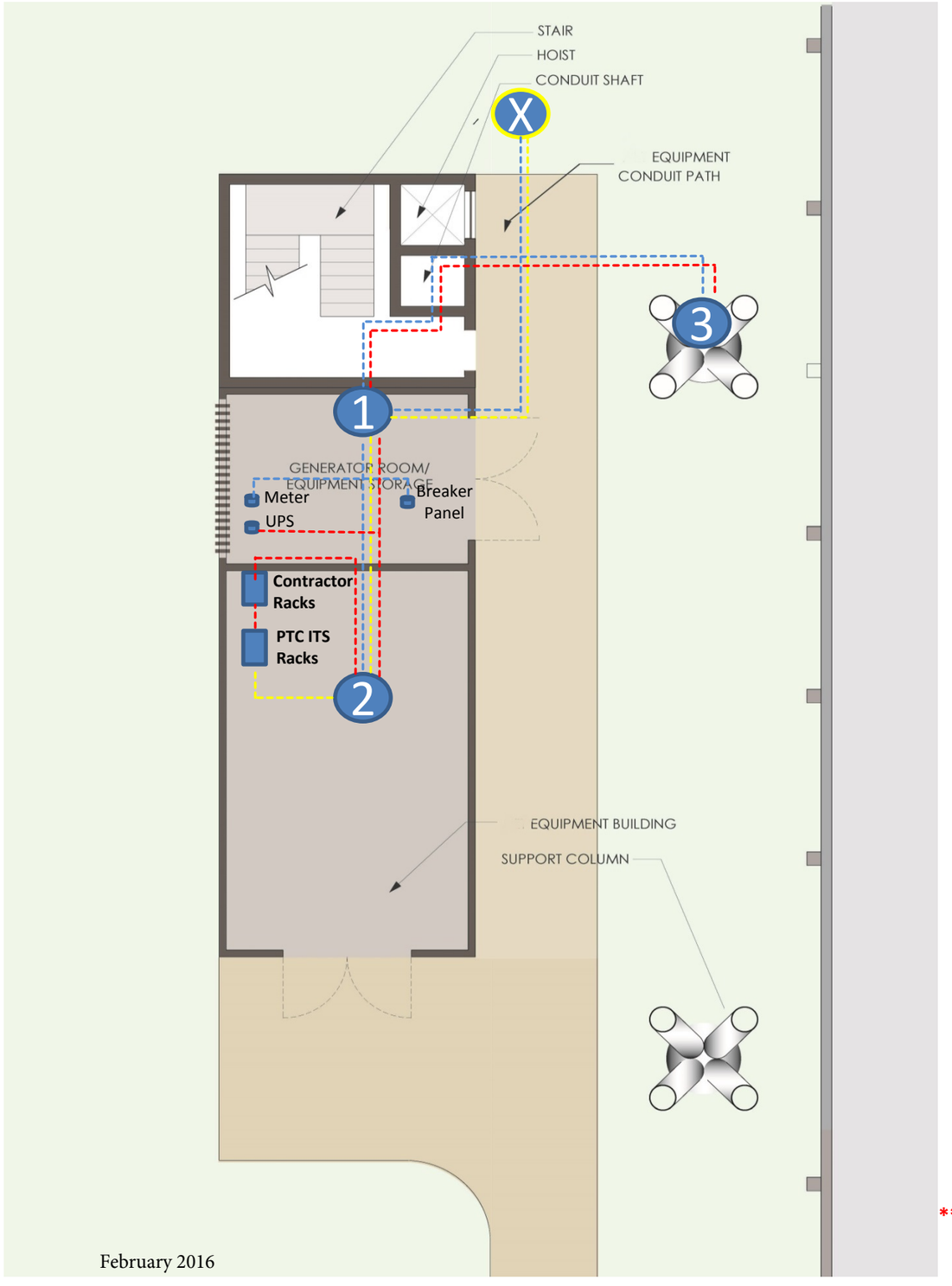
Power Cabling:

- Grounding and surge protection by **Civil Contractor**.
- Power from point X to generator room point #1 by **Civil Contractor**.
- Power from generator room point #1 to equipment in generator room, including but not limited to meter, breaker panel, UPS and generator by **Civil Contractor**.
- Power from generator room point #1 to toll equipment room point #2 and toll gantry demarcation point #3 by **Civil Contractor**.
- Power from demarcation point #2 to LAN and toll equipment rack in toll equipment room by **Contractor**.
- Power from demarcation point #2 to WAN and ITS Equipment rack in toll equipment room by **PTC**.

Data Cabling:

- Network connectivity from point X to toll equipment room point #2 by **Civil Contractor/PTC**.
- ITS and WAN cabling from toll equipment room point #2 to PTC ITS equipment racks by **PTC**.
- LAN to WAN connections from PTC ITS racks to toll equipment racks in toll equipment room by **Contractor**.
- Toll System cabling from toll equipment room point #2 to toll equipment racks by **Contractor**.
- Toll System cabling from toll equipment rack in toll equipment room to gantry point #3 by **Contractor**.
- Toll system cabling from toll equipment rack in toll equipment room to UPS in generator room by **Contractor**.

*****FOR PLANNING PURPOSES ONLY. EXACT LOCATIONS OF DEMARCATION POINTS TO BE DETERMINED DURING FINAL DESIGN.*****



Toll Equipment Building (TEB) Demarcation Points
Maintenance from Above Option

Utilities:

- Power from point of service to TEB point X by **Civil Contractor**.
- Network connectivity from point of service to TEB point X by **Civil Contractor/PTC.**

Conduit Installation:

- Conduit from point of service to TEB point X by **Civil Contractor**.
- Conduit from point X to generator room point #1 by **Civil Contractor**.
- Conduit from generator room point #1 to equipment room point #2 and to gantry point #3 by **Civil Contractor**.
- Conduit from point #2 to toll equipment racks in toll equipment room by **Contractor**.

Power Cabling:

- Grounding and surge protection by **Civil Contractor**.
- Power from point X to generator room point #1 by **Civil Contractor**.
- Power from generator room point #1 to equipment in generator room, including but not limited to meter, breaker panel, UPS and generator by **Civil Contractor**.
- Power from generator room point #1 to toll equipment room point #2 and toll gantry demarcation point #3 by **Civil Contractor**.
- Power from demarcation point #2 to LAN and toll equipment racks in toll equipment room by **Contractor**.
- Power from demarcation point #2 to WAN and ITS Equipment rack in toll equipment room by **PTC**.

Data Cabling:

- Network connectivity from point X to toll equipment room point #2 by **Civil Contractor/PTC**.
- ITS and WAN cabling from toll equipment room point #2 to PTC ITS equipment racks by **PTC**.
- LAN to WAN connections from PTC ITS racks to toll equipment racks in toll equipment room by **Contractor**.
- Toll System cabling from toll equipment room point #2 to toll equipment racks by **Contractor**.
- Toll System cabling from toll equipment rack in toll equipment room o gantry point #3 by **Contractor**.
- Toll system cabling from toll equipment rack in toll equipment room to UPS in generator room by **Contractor**.

*****FOR PLANNING PURPOSES ONLY. EXACT LOCATIONS OF DEMARCATION POINTS TO BE DETERMINED DURING FINAL DESIGN.*****

Gantry Demarcation Points

Conduit Installation:

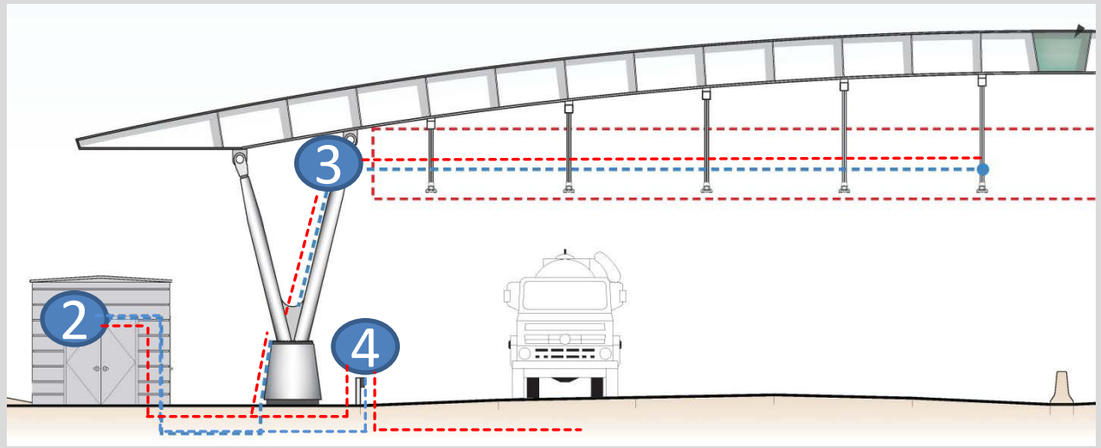
- Conduit from TEB point #2 to gantry point #3 by **Civil Contractor**.
- Conduit from TEB point #2 to roadside point #4 (if necessary) by **Civil Contractor**.
- Conduits, junction boxes and connectors from gantry point #3 to toll equipment on the gantry by **Contractor**.
- Conduits, junction boxes, cabinets and connectors from roadside point #4 to in-lane sensors (if necessary) by **Contractor**.
- Conduits from TEB point #2 to DVAS pole (not shown) by **Civil Contractor**.

Power Cabling:

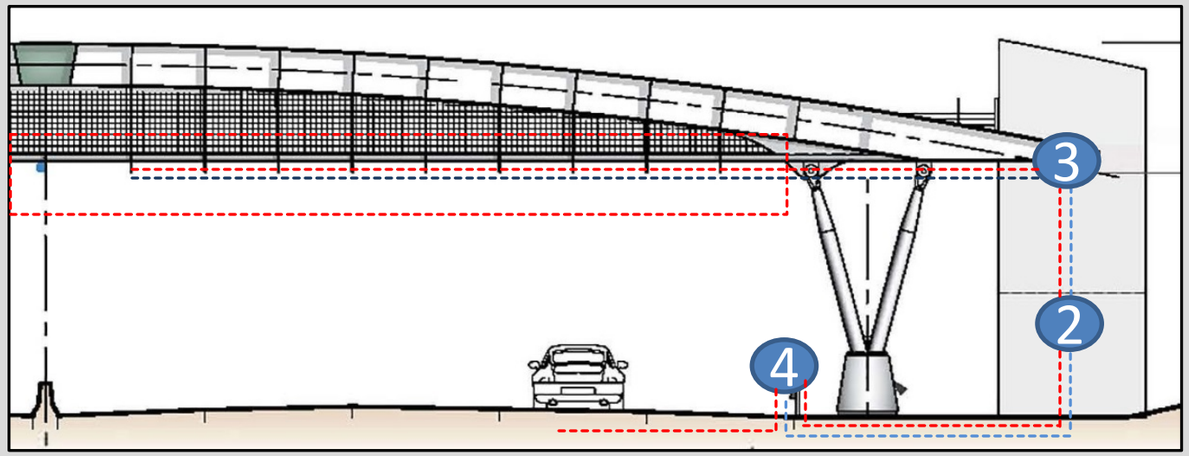
- Grounding and surge protection by **Civil Contractor**.
- Power from TEB point #2 to gantry point #3 by **Civil Contractor**.
- Power from TEB point #2 to roadside point #4 (if necessary) by **Civil Contractor**.
- Power from gantry point #3 to toll equipment on gantry by **Contractor**.
- Power from roadside point #4 to in-lane sensors (if necessary) by **Contractor**.
    - Power from TEB to DVAS mounting pole (not shown) by **Civil Contractor**.

Data Cabling:

- Toll System cabling from toll equipment racks in toll equipment room to gantry point #3 to gantry toll equipment by **Contractor**.
- Toll System cabling from toll equipment racks in toll equipment room to roadside point #4 to in-lane sensors (if necessary) by **Contractor**.
- Toll System cabling from DVAS servers in TEB to DVAS camera by **Contractor**.



Maintenance from Below



Maintenance from Above

General Notes (not illustrated in diagram)

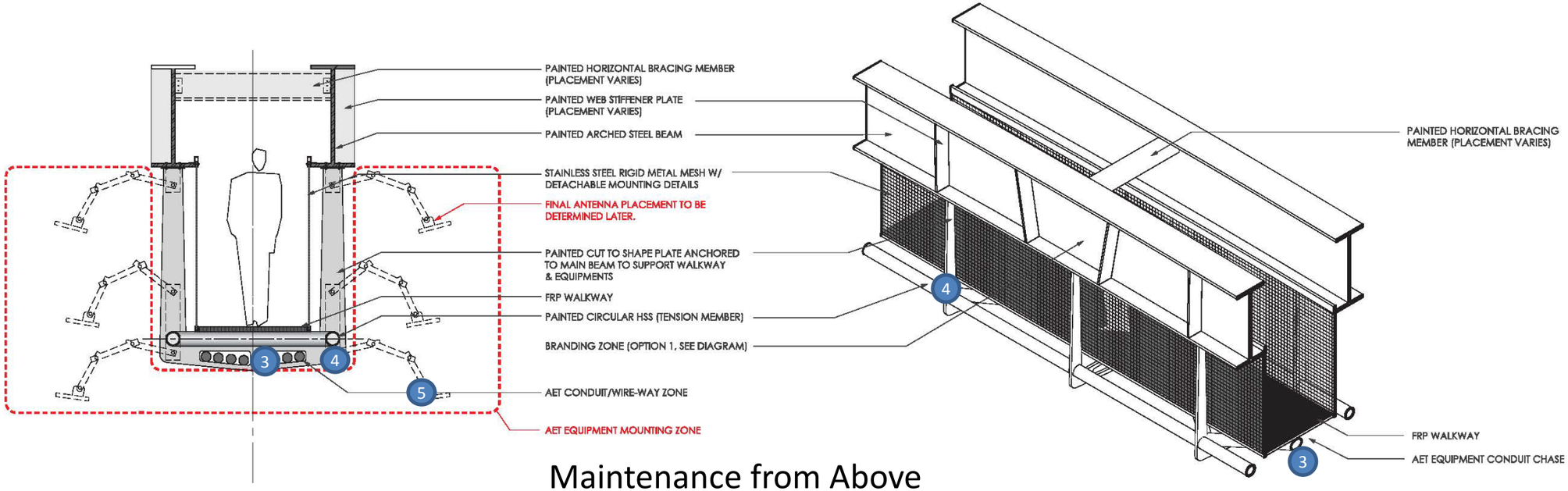
- Contractor to coordinate with Civil Designer and Civil Contractor(s) to specify the location, number and diameters of conduits required for the toll equipment installation, specify conduits for power, data and RF cables.

*****FOR PLANNING PURPOSES ONLY. EXACT LOCATIONS OF DEMARCATION POINTS TO BE DETERMINED DURING FINAL DESIGN.*****

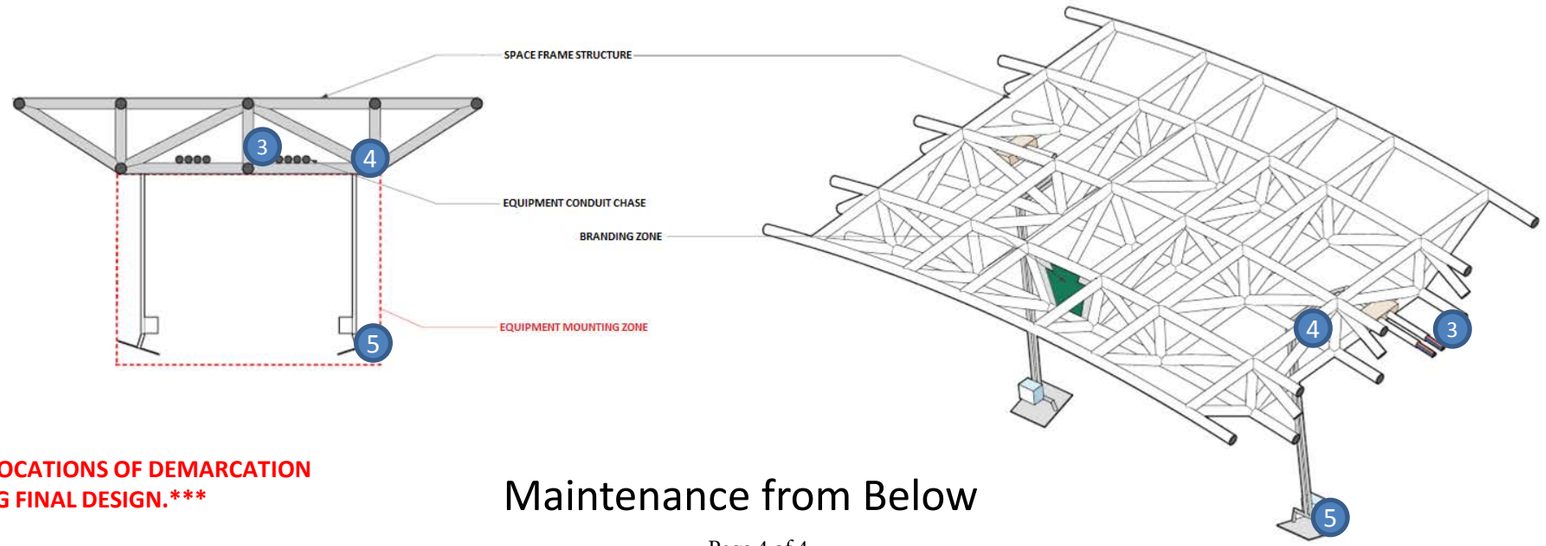
Gantry Mounting Equipment Demarcation Points

Mounting Equipment Installation:

- Gantry equipment mounting arms and support plates from gantry point #4 to point #5 provided and installed by Civil Contractor based on location (point #5) provided by the Contractor.
- Mounting brackets and Toll Equipment to the mounting arms and support plates point #5 provided and installed by Contractor.
- Installation of conduits and cables to point #3 described on previous pages.



Maintenance from Above



Maintenance from Below

*****FOR PLANNING PURPOSES ONLY. EXACT LOCATIONS OF DEMARCATION POINTS TO BE DETERMINED DURING FINAL DESIGN.*****

Attachment 7
PTC Cashless Tolling Security Standards

Cashless Tolling Operational Security

1	All Cashless Tolling applications, along with supporting components (operational technology) and subsystems (operating systems), must maintain current manufacturer's recommended security updates.
2	An escalation procedure must exist for the PTC to address and mitigate system and software security vulnerabilities discovered during normal operational monitoring as well as any security breaches.
3	All user accounts used to access any Cashless Tolling component or subsystem (hardware, operating system, application software) must be controlled through integration with the Commission's Active Directory implementation.
4	If local accounts are required for remote access or recovery processes, their number, per system, will be kept to an absolute minimum and the account passwords must meet the requirements and standards of the Commission.
5	Access logging must be enabled on all Cashless Tolling systems and subsystems, for local account usage, and forwarded to the PTC's SIEM for event correlation.
6	A system level account is required on all Cashless Tolling supporting systems for use in performing continuous credentialed PTC security assessment scans.
7	All Cashless Tolling network-connected components and subsystems must accept and run the current Commission endpoint protection.
8	All Cashless Tolling related systems and subsystems will be hardened to accepted security standards. This includes, but is not limited to: stopping of unnecessary services, removal of protocols not needed for operation, disabling/removal of all unnecessary account, etc.
9	PTC IT Security reserves the right to remove any system or subsystem of Cashless Tolling if it has been determined to be a security threat to the larger PTC enterprise.
10	There will be no "backdoor" connections to any part of the Cashless Tolling system without prior authorization from PTC IT Security. All outside access must be made through the PTC's Internet gateway.
11	Connectivity to any new Cashless Tolling system or subsystem is prohibited without PTC IT Security's acknowledgment and authorization.
12	All new Cashless Tolling systems, subsystems or related components must be qualified by PTC IT Security personnel through vulnerability & risk acceptance testing before the system is placed into production.

Cashless Tolling Project Implementation Security

1	All Contractor personnel shall be subject to appropriate security and background checks to the satisfaction of the Commission. The Contractor shall obtain written Approval from the Commission for all service personnel.
2	All Contractor personnel must sign a PTC acceptable use agreement.
3	Contractor's personnel shall be issued PTC identification badges and shall wear such identification badges at all times when on the PTC property. Use of such identification badges for purposes other than work associated with the contract will result in termination of the employee from the contract and possible other legal or disciplinary action.
4	The services and work performed under the Contract are considered highly confidential and the Contractor personnel shall at all times comply with applicable current computer and data industry standards with regard to data and information security. All employees of the Contractor shall not discuss their work with unauthorized personnel or any individuals not directly associated with the Commission.
5	All Contractor personnel shall use only PTC-assigned workstations, servers, and laptops to communicate with Cashless Tolling Systems while on PTC property.
6	Discussion by the Contractor of any services or work performed under the contract with the media, in oral presentations, in written publications, or in any other form, not related to this Contract shall be Approved in advance by the Commission.
7	The Contractor will provide an infrastructure/architectural security overview and hardening task lists for PTC project-related personnel. This includes, but is not limited to: Cashless Tolling servers, lane controllers, plaza hosts, etc.

Attachment 8A
PTC Records Management Manual

Table of Contents

1. Introduction

The PTC Records Management Program is designed to control the creation, distribution, use, retention, storage, retrieval, protection, preservation, and final disposition of recorded information required in the operation of PTC business.

The management of PTC records cannot be taken lightly. If not done properly, records may be lost and unavailable for PTC or other use, or may not be properly preserved for business or historical purposes. The improper assignment of overly lengthy retention periods or the reluctance to transfer or destroy records according to records schedules creates costly and false needs for more equipment, floor space, supplies, and personnel.

The objectives of the PTC Records Management Program are to:

- Ensure that the PTC complies with prevailing state and federal guidelines as well as legal requirements related to litigation, government investigations and audits.
- Define the procedures by which PTC employees manage PTC records.
- Ensure that employees maintain only those records that are needed for legal compliance and to support current operations of the PTC.
- Ensure that employees maintain only Official Records and minimize retention of non-critically important documents, e.g. Convenience Copies, immediately upon expiration of their active, useful value.

1.1. General Guidelines for Records Management

Keep only what is legally or functionally needed. Do not retain convenience copies.
Records should be periodically purged; e.g. (monthly).
File by class code if possible.
-This will help to simplify the purge process.

Determine if information, in any form, falls under the PTC Records Retention Schedule and if applicable it must be stored as indicated in the PTC Records Retention Schedule.

Records in any form; paper, maps, or other physical or media form; MS Word, Excel, Power point, Project, or other electronic format or media form, will fall under the PTC Records Retention Program.

When determining if information falls under the PTC Records Retention Schedule please consider the following related to the following electronic communications methods:

Voice Mail - Voice Mails are normally retained for 30 days. After determining that a voice mail includes records that must be preserved, the employee must copy the message to a separate store, e.g. PTC Network drive, external media, where it must be retained as indicated in the PTC Records Retention Schedule.

Instant Messaging (IM) - Instant messages are not retained and should not be used to transmit records. IMs should be considered to be transitory in nature that is having little or no documentary or evidential value.

E-Mail – Regardless of how e-mail is accessed, e.g. smart phone, laptop, desktop, etc., e-mail is stored on PTC e-mail servers. E-Mail and e-mail attachments can be records and as such will fall under the PTC Records Management Program. Any e-mail that is considered to be a record must be moved out of e-mail to a separate store, e.g. PTC Network drive, external media, where it must be retained as indicated in the PTC Records Retention Schedule.

Phone System – The PTC phone system retains various call information, e.g. calling party, called party, length of call, original number dialed, time of call, talk duration, etc. This information is retained for 10 days.

1.2. Records Retention Schedule Overview

What is the Records Retention Schedule?

The Schedule is a tool that is used to ensure that records are being kept as long as legally and operationally required. The PTC retention schedule is used by employees to ensure that the PTC adheres to existing record keeping regulations and requirements and does so consistently.

Record Classes

Record Classes are categories of records that relate to the same (or similar) business process. Grouping like records together allows the PTC to apply consistent retention practices to similar records.

Each Record Class has a name and description. It also has some sample **Record Types**- Specific example of forms, reports, documents, etc. that all belong to the Record Class.

Each Record Class has three main retention periods:

- The **Legal Retention** period (the period of Time stipulated by the legal research),
- The **User Retention** period (the period of time specified by PTC for their business need), and
- The **Official Retention** period (the greater of the Legal and User Retention periods). All records will be kept for the Official Retention period for the applicable Record Class.

See the **Records Retention Schedule** for approved retention periods.

Record Class Criteria

Record Classes do not necessarily reflect how records are filed or stored. The criteria used to create a record class include:

- **Similar Business Function**. The records within a record class should support a similar business function, such as “accounts payable processing.”
- **Similar Retention Requirements**. The records within a record class should have similar Retention periods (as they will all be stored that same amount of time).

Factors Used to Determine Retention Requirements

The Records Retention Schedule takes two types of factors into account when determining retention periods for records:

- **Legal Research Requirements**. The Legal Research Requirements constitute the legal obligations and considerations that PTC took into account when determining the legal retention periods for records. Legal Research Requirements includes both Legal requirements and Legal Considerations.

- **User Retention Requirements**. The period of time that PTC employees need records "to do their job."

The Official Retention Period for each Record Class is the greater value of the legal and user retention requirements. All records within a Record Class will be kept for the Official Retention Period.

1.3. Life Cycle of Records

To be most effective, a records management program must address the entire 'life cycle' of records. According to the life cycle concept, records go through four distinct phases:

A. Creation. Records are created in various ways, such as when a supervisor sends out an office memorandum, when a permit application is received from a contractor, or when a monthly report is created. By understanding how and why a record is created, the administrator is able to determine its value, and retention requirements.

B. Active Use. Once a record has been created or received, it moves into the active use phase of its life cycle. At this level, the information is seen as both an individual record and as part of an overall record class. During this state, the record is referenced from time to time by PTC personnel in connection with official activities and functions. As the record is used frequently during the active period, quick access to these records are needed.

Note: Active Records are maintained on-site.

C. Inactive Use. As time goes by, the need for a record diminishes and it enters the inactive phase of its life cycle. It is during this phase that the record no longer needs to be kept in the office or on-line to carry out PTC business, but must still be maintained for administrative, legal, or fiscal reasons. Inactive PTC records that must be retained to satisfy some continuing administrative, legal, or fiscal purpose should be transferred to the off-site storage facility.

As with active records, the time period that each record is considered inactive varies.

Note: Inactive Records are maintained off-site at the PTC warehouse. Records are no longer shipped to the PA State Records Center; however PTC inactive records that are currently in storage at the PA State Records Center will remain there until final disposition.

D. Final Disposition. The last phase of the record's life cycle occurs when it is no longer needed for PTC business or to satisfy legal requirements. Disposition is the final treatment of the record, and involves either destruction or transfer of permanently valuable records to the PTC Warehouse or State Archives for historical purposes.

1.4. Definitions

Convenience Copies –
Copies created for the convenience of business users; Convenience Copies must not be kept longer than the Official PTC Record.

Litigation Hold (also known as Mandatory Preservation Notices) –
Suspension of all document destruction procedures where there is pending or imminent litigation, government investigation, subpoena, tax hold, audit, or other consideration.

Non-records –
Information that does not meet the definition of a record as defined in this document. These materials relate to non-PTC business or activities and may include items such as announcements of community events and personal e-mails. Non-records may also include publications such as trade journals, pamphlets, and reference materials received from outside organizations, conferences, and workshops.

Official PTC Record –
Information, regardless of physical form or a characteristic, that documents a transaction or activity of the PTC and that is created, received, or retained pursuant to law or in connection with a transaction, business, or activity of the PTC. The term Official PTC Record includes a document, paper, letter, map, book, tape, photograph, film or sound recording, information stored or maintained electronically, and a data-processed or image-processed document. The term Official PTC Record excludes transitory records (which are records that have little or no documentary or evidential value and that need not be set aside for future use; have short term administrative, legal, or fiscal value and should be disposed of once that use has expired; or are only useful for a short period of time).

Record –
Information, regardless of physical form or characteristics, that document a transaction or activity and that is created, received or retained pursuant to law or in connection with a transaction, business or activity. The term includes media in any form including but not limited to a document, paper, letter, map, book, tape, photograph, film or sound recording, information stored or maintained electronically, and a data-processed or image-processed document.

Transitory Records –
Records that have little or no documentary or evidential value and that need not to be set aside for future use; have short term administrative, legal or fiscal value and should be disposed of once that administrative, legal or fiscal use has expired; or are only useful for a short period of time, perhaps to ensure that a task is completed or to help prepare a final product.

2. Records Management Team

2.1. Records Manager

Essentially, the Records Manager acts as the representative of the PTC regarding all issues of records management policy obligations. The following are the Records Manager's responsibilities and duties:

- ***Serve as the primary liaison and point of contact with PTC executive staff, PTC Legal Department, PTC Policy Administrator, PTC Records Coordinators, PTC Records Clerk, and IT Department.***
  As the Records Manager is charged with overseeing the records management program within the PTC, it is important to maintain a relationship with these individuals. This relationship will allow the Records Manager, PTC Executive Staff, PTC Legal Department, PTC Policy Administrator, PTC Records Coordinators, PTC Records Clerk, and IT Department to work together to provide professional and technical direction, as well as to develop improved procedures, policies, and training. Without communication from the Records Clerk and Records Coordinators, the Records Manager will be unaware of common difficulties and consequently will be unable to help resolve them.

- ***Assist departmental staff by facilitating the inventory, analysis, and scheduling of records. Oversee and facilitate PTC efforts, along with Legal Counsel, to inventory, evaluate, and schedule records and develop methods to control the creation, maintenance, and disposition of records.***

- ***Ensure that the program is running effectively.***
- ***Ensure that the destruction review process takes place.***
- ***Maintains master Certificate of Destruction forms.***
- ***Coordinate Annual Purge Process.***

2.2. Records Coordinator

Department Heads shall appoint representatives to serve as their department's records coordinators.

The following are the responsibilities of the Records Coordinator:

- ***Coordinate, monitor and reinforce the records management process for their respective department/functional group, with a focus on:***
    - Filing Active Records
    - Filing Inactive Records
    - Disposition of Records
    - Retrieval of Records
    - Annual Clean-up & Purge
    - Transfer and retrieval of records off-site

- ***Serve as primary liaison and point of contact between the department/functional group and the PTC Records Manager and Records Clerk.***
  As the Records Coordinator is charged with overseeing the records management program within the their respective department/functional group, it is important to maintain a relationship with the Records Manager, Records Clerk and fellow Records Coordinators. This relationship will allow the Records Coordinator, Records Clerk and Records Manager to work together to provide professional and technical direction, as well as to develop improved procedures, policies, and training. Without communication from the Records Coordinators, the Records Manager and Records Clerk will be unaware of common difficulties and consequently will be unable to help resolve them. **The Records Coordinator is the point of contact for questions concerning the records management program within their department/functional group.**

- ***Assist departmental staff with reviewing and maintaining the PTC's Records Retention Schedule.***
  The Records Coordinator should participate in the records inventory and then use that information to help prepare additions and changes to the PTC's Records Retention Schedule. To assist in this stage, the Records Coordinators should work with PTC personnel, the PTC Records Manager and PTC legal counsel to determine the length of time records need to be maintained and to identify records that are protected by attorney-client privilege and/or work product doctrine.

- ***Disseminate information to department/functional group, and ensure that new record types for department are added to the retention schedule.***

- ***Coordinate with Records Clerk requests for boxes and forms.***

2.3. Records Clerk

The Records Clerk is responsible the day to day activities of the Records Management Program. This individual serves as liaison to the Records Coordinators and Records Manager, and supports their efforts as part of the Records Management Program.

As Records Coordinators are charged with overseeing the records management program within their respective department/functional group, it is important to maintain a relationship with the Records Manager to assist and support their efforts.

As the Records Manager is charged with overseeing the entire PTC records management program, it is important to maintain a relationship with the Records Manager and support their efforts. The Records Clerk will:

- ***Serve as liaison to the Administrative Services department.***
- ***Issue supplies, including boxes, forms, labels, etc.***
- ***Coordinate the transportation of records to the off-site storage facility and staging facility.***
- ***Coordinate the pick-up of records from the off-site storage facility.***
- ***Maintain the Records Management Procedures Guide.***
- ***Receive and maintain PTC Inactive Records Storage forms.***
- ***Enter information from various forms into designated computer systems/files.***
- ***Assign and maintain box numbers for inactive storage boxes.***
- ***Apply numbers to boxes.***
- ***Ensure occurrence of annual records purges***
- ***Coordinate semi-annual destruction reviews***

2.4. Legal Department

The Legal Department representative will:

- ***Provide a legal perspective to the destruction review process.***
- ***Provide legal guidance for overall Records Management Program.***
- ***Schedule meetings with PTC coordinators, records clerk, and program manager, as needed, to discuss timely issues such as compliance or needed program modifications.***
- ***Perform and review legal research associated with the Records Retention Schedule.***
- ***Review Policy.***

2.5. Facilities and Energy Management Operations Department

Duties & Responsibilities:

- ***Maintain carton/box inventory.***
- ***Delivery and pick-up of records to/from the off-site storage facility.***
- ***Move boxes from department locations to staging area prior to transportation to the off-site storage facility.***
- ***Place boxes into storage at off-site facility using a methodology that will allow for easy access and availability as needed.***
- ***Assist Records Clerk with the implementation of the semi-annual destruction process, listing of records ready for destruction, retrieval of containers, etc.***

2.6. Information Technology Department

Duties & Responsibilities:

Support the Records Management Program by:

- ***Providing the systems that are necessary to administer and maintain the program.***
- ***Providing required resources for electronic records retention.***

2.7. Off Site Storage - PTC Warehouse/PA State Records Center

Duties & Responsibilities:

- ***PTC Warehouse is the current PTC off-site storage facility.***
- ***PA State Records Center is the former PTC off-site storage facility.***
  - ***Boxes are no longer transported to the PA State Records Center; however boxes that are currently at the PA State Records Center will remain there until final disposition.***
- ***PA State Records Center STD Form distributor.***

2.8. PTC Employees

Duties & Responsibilities:

- ***Prepare records for inactive storage.***
- ***Use discretion creating records.***
- ***Treat records as PTC property.***
- ***File records carefully.***
- ***Adhere to processes associated with convenience copies, transitory, and non-records.***
- ***Adhere to the PTC Records Management Policy.***

3. Records Management Procedures

3.1. Records Inventory

3.1.1. Overview

A records inventory was performed in 1999 by the Iron Mountain Consulting Group. This records inventory was a survey of all PTC records and was used primarily to develop and maintain a retention schedule. The inventory identified all records and their locations. This information enabled the PTC to compile and maintain a retention schedule.

A comprehensive inventory of records should be done when the PTC undergoes major reorganization or is reevaluating its records management program. Individual inventories need to be completed when new record series are added to the PTC's records schedule. All media types, such as paper, magnetic tapes, disks, CDs/DVDs, maps, drawings, photographs, and microfilm, must be included in an inventory.

3.2. Annual Clean-up & Purge

Responsible Parties: Records Manager
Legal
Records Clerk
Records Coordinator
All Employees

Scheduled: Annually or On Demand

3.2.1. Overview

The annual purge process occurs once a year and is a PTC enterprise initiative, and the following procedure should be used to evaluate associated records.

3.2.2. Procedures

3.2.2.1.1. Preparation –

- Retrieve Pre-Numbered boxes from Records Clerk. **Note: Use these official boxes for the Records Management Process, ONLY!**

- Obtain PTC Inactive Records Storage Forms from Records Clerk.
- Proceed to the Record Evaluation Procedure, which follows:

- **Step 1 – Record Evaluation**

  Determine if the information/record is Transitory, a Non-Record, or a Convenience copy –

  - Does the information have little or no documentary or evidential value, or,
  - Is the information a copy of an original record?

If YES –
You may dispose of the record OR Proceed to Step 2.

If NO –
Proceed to Step 2.

- **Step 2 – Can You Dispose of Record?**

  - **Step 2a: Find the 'Record Class Code' and 'Official' Retention Period.**
    - Reference the Records Retention Schedule.
    - What department/business group owns the record? Locate that 'Business Function.'
    - Find the 'Record Class Name'/'Record Class Description'/'Record Type' in the schedule.
    - Note the 'Record Class Code' and 'Official' retention period.

  - **Step 2b: Determine End of Retention Period.**
    - If 'Official' column DOES NOT list 'ACT+':
    - Add number of years in the 'Official' column to 'Date of Record'.
    - Proceed to Step 2c.
    - If 'Official' column lists ACT:
    - If activity concluded, add number of years in 'Official' column to date activity concluded.
    - If activity on-going, re-file onsite.

- **Step 2c: Is Current Date Greater than End of Retention Period?**

-**If YES** –
YOU MUST Dispose of Properly.
-**If NO** –
Proceed to Step 3.

- **Step 3 – Determine Where & How to File.**

  - **Step 3a: Is the Record a 'Convenience' Copy?**

    - If YES

      Do I frequently use it or reference it?

    - If YES –

      Re-file onsite; however convenience copies must be disposed of before the end of the referenced records retention period.

    - If NO –

      Dispose of Properly

    - If NO ('Official' Record):

      Proceed to Step 3b.

  - **Step 3b: Is the Record 'Active' or 'Inactive'?**

    - If 'ACTIVE' Record (frequently used or referenced) OR Activity Ongoing

      Re-File Onsite

    - If 'INACTIVE' Record

      Proceed to Step 3c.

- **Step 3c: Filing 'INACTIVE' Records.**
    - File records in box by 'Record Class Code'.
      One RECORD CLASS CODE per box.
      DO NOT WRITE ON or ALTER BOX.

- **Step 3d: Start Filling Out PTC Inactive Records Form.**
    - See Forms Tab for Instructions and Form.
    - One Form per Box.

- **Step 3e: Filing 'INACTIVE' Records.**
    - When finished or box is full, place lid on box.
    - Lid must fit on completely.
    - Complete PTC Inactive Records Storage Form.

- **Step 4 – Coordinate with Records Clerk**
    - **When Purge is Complete:**
        - Contact Records Clerk.
        - Return Completed PTC Inactive Records Storage Form(s) to Records Clerk.
    - **Communicate the following to Records Clerk:**
        - *EXACT location of boxes
        - *# of boxes
        - *Box numbers

- **Step 5 – Pick-up and Delivery**
    - Records Clerk coordinates pick-up and delivery.
    - The Records Clerk contacts Administrative Services.
    - Administrative Services picks up boxes and delivers to the warehouse area.
    - Administrative Services communicates back to Records Clerk verifying the pick-up and delivery.

3.3. Formal Disposal Process

3.3.1. Overview

Semi-annually, the Information Technology Department receives a Destruction Candidate Report, from FEMO and/or PA State Records Center, listing stored cartons that are eligible for destruction.

3.3.1.1. Procedure

Department managers will have two weeks to review the Destruction Candidate Report and note records that are still required to be maintained due to PTC ongoing business operations.

Information Technology will forward the Destruction Candidate Report to the Legal Department for final review and verification that no records controlled by Litigation Holds or Mandatory Preservation Notices have been authorized for destruction.

Upon receipt of the final approved Destruction Candidate Report, Information Technology will initiate the destruction of records. Information Technology will maintain all documentation verifying the destruction of records.

3.4. Forms

The PTC Inactive Records Storage Form can be found at:

http://ptcintranet/document_library/documents/Inactive_Records_Form.pdf

Instructions for filling out the Inactive Records Storage Form

Record Class Code: This is the record class code from the Records Retention Schedule for the group of records you are filing. Remember, only one (1) Record Class Code per sheet, per box. (This is a required field)

Date of Most Current Record in Box: This is the latest record date within the box. If, for example, there are records in the same box dated 08/96 and records dated 05/97, the date of the most current record would be 05/97. (This is a required field)

Prepared By: This is the name of the person filling out this form and placing the records into the box. (This is a required field)

Date: This is the current date. (This is a required field)

Box Number: This is the number that is on the Box. Each Box will have a unique number assigned by the Records Clerk. The number on the Box goes into this field. **This number MUST match the one on the box.** (This is a required field)

Record Class Descriptions and Records Types (contents): This field contains a description of the contents of the box. It is this field that you will use to perform searches on when trying to find records that you have stored off-site. Be sure to enter enough information so that you will be able to retrieve these records in the future. (This is a required field)

General Information: This is not a required field however you may use it to add additional information regarding the contents of the box.

The information on this form will be entered into a database system for reporting and retrieval purposes, so please be sure that all information on the form is legible.

Appendix A - Records Management Policy

See the Policy Letters Manual at:

http://ptcintranet/document_library/documents/Policy_Letters.pdf for current

Policy Letter 8.6 - Records Management Policy

Attachment 8B
PTC Records Retention Schedule

Pennsylvania Turnpike Commission

3/17/2009

Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC100	**Accounts Payable** **Invoices and Vouchers** Records related to the payment of financial obligations. These documents verify the purchase of goods and services. Includes vendor invoices and supporting documents needed to verify the accuracy of the invoice and to authorize payment. **Examples Include:** Accounts Payable Invoices Accounts Payable Vouchers Cancelled Checks Check Copies Check Registers **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep one year from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4
AC110	**Accounts Payable** **Employee Expenses** Records used to manage and administer the employee expense reimbursement function. Includes forms issued to employees for reimbursement, audit reports, authorizations, etc. **Examples Include:** Cash Advances Employee Expense Reports Request for Travel Advance Travel Expense Vouchers **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep one year from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4

Revision Date: 3/17/2009

Pennsylvania Turnpike Commission

Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC120	**Accounts Payable** **Petty Cash** Records related to the administration of the petty cash function. Includes petty cash disbursements. **Examples Include:** Petty Cash Disbursements **ACT (Activity) Event:** For federally funded projects, keep record in agency four years from the date the project is completed. For all other records, keep four years from the end of the fiscal year in which the record was created.	ACT+4		0		ACT+4
AC130	**Accounts Payable** **Management Reports** Records that are related to the review and management of the accounts payable function. Includes reports that are used to reconcile accounts. Does not include the actual vendor invoices and supporting documentation. See schedule record series number 001 for Accounts Payable / Invoices and Vouchers. **Examples Include:** Batch Edit Reports General Journal Reports **ACT (Activity) Event:** Retain until updated or superseded.	0		0		0

Pennsylvania Turnpike Commission

Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC140	**Accounts Receivable Customer Invoicing** Records documenting the invoices sent to customers and the payments received. Includes invoices, check copies, and check requests. **Examples Include:** Check Copies Check Requests Invoices **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep one year from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4
AC150	**Accounts Receivable Cash Receipts** Records documenting cash payments received from toll collections. Includes cash receipts and deposit slips. **Examples Include:** Cash Receipts Ledgers Lockbox Receipts **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep one year from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4

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Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC160	**Accounts Receivable Management Reports** Records that are related to the review and management of the invoicing and accounts receivable function. Includes review reports and control logs. See schedule record series number 005 for Customer Invoicing and schedule record series number 006 for Cash Receipts. **Examples Include:** Accounts Status Reports Surety Reports **ACT (Activity) Event:** Retain until updated or superseded.	0		0		0
AC170	**Capital Assets** Records used to document the purchasing activity of items that are capitalized, the purchase and sales of property and equipment and their depreciation, improvements, etc. Includes records related to the acquisition, transfer, retirement, disposal or loss of fixed assets that have been capitalized. Also included are reports that summarize this information. See schedule record series number 009 for Capital Assets - Federally Funded. **Examples Include:** Auction Records Capital Asset Reports Contract Estimates for Payments Depreciation Reports Fixed Asset Schedules Request for Disposal (Signed) Sale of Surplus Property Records **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4

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Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC180	**Capital Assets - Federally Funded** Records used to document the purchase and sale of property and equipment which is federally funded. Includes records related to the acquisition, transfer, retirement, disposal or loss of fixed assets that have been capitalized. Also included are reports that summarize this information. See schedule record series number 008 for Capital Assets. **Examples Include:** Capital Asset Reports Contract Estimates for Payments Depreciation Reports Fixed Asset Schedules **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep one year from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4
AC190	**General Ledger Journal Entries** Records used to transfer charges between accounts and for summarizing account information. Includes entries made to the general ledger to correct coding errors, correct ledger accounts, accrue for expenses not yet paid, or other similar activities. **Examples Include:** Edit Cycle Records Journal Entries **ACT (Activity) Event:** Retain two years from the end of the fiscal year in which the record was created.	ACT+2		2		ACT+4

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Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC200	**General Ledger** **Subsidiary Ledgers** Records consisting of subsidiary ledgers. See schedule record series number 012 Year End Ledger and Trial Balances. **Examples Include:** Ledgers - Additional Improvements Ledgers - Construction Ledgers - RMF Ledgers - Tunnel Improvements Registers **ACT (Activity) Event:** Retain four years from the end of the fiscal year in which the record was created.	ACT+4		0		ACT+4
AC210	**General Ledger** **Year-End Ledger and Trial Balances** Records related to the general ledger. Includes the actual general ledger that summarizes all corporate accounts. See AC200 for Subsidiary Ledgers. **Examples Include:** General Ledger - Year End Trial Balances **ACT (Activity) Event:** The end of the fiscal year in which the record was created.	ACT+10		0		ACT+10

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Accounting

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC220	**Financial Statements** Financial statements, operating statements, GAAP reports, and background information submitted to government agencies, etc. Includes financial and operating statements submitted to the State of Pennsylvania and outside auditors. **Examples Include:** Annual Reports GAAP Reports Official Statements Operating Reports - Year End Operating Statements **ACT (Activity) Event:** The end of the fiscal year in which the record was created.	ACT+10		0		ACT+10
AC230	**Interim Financial Records** Records related to interim financial records including interim inventory records, interim general ledgers, and interim financial reporting. **Examples Include:** GL Account Status Report Monthly Budget Statements Monthly Capital Projects Reports Monthly Cost Distribution Monthly Operating Reports **ACT (Activity) Event:** Retain four years from the end of the fiscal year in which the record was created.	ACT+4		0		ACT+4

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Administration

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AD100	**Administrative Inventory Control** Records documenting the type, model, location, and quantities of commission-owned property (such as supplies, equipment, etc). These records are used for operational purposes only. Includes corporate items maintenance forms, inventory activity forms and inventory listings. **Examples Include:** Corporate Items Maintenance Forms Inventory Activity Forms Inventory Lists **ACT (Activity) Event:** The date that the assets are sold or disposed of.	ACT+1		0		ACT+1
AD110	**Internal Services** Records related to providing internal support for Commission personnel including services and products. Includes material and supply orders. **Examples Include:** Internal Service Orders Reproduction/Copy Service Orders **ACT (Activity) Event:** The date that the record was created.	3		0		3
AD120	**Office Maintenance and Repair** Records related to repairs and maintenance of office and building equipment. Includes repair/maintenance of roofing, plumbing, mechanical systems, etc. **Examples Include:** Repair Records Work Orders **ACT (Activity) Event:** The date that the assets are sold or disposed of.	ACT+1		0		ACT+1

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Administration

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AD130	**Receiving and Inspection**	1		5		6

Records related to the receipt and inspection of goods purchased. Includes records that document the conditions and quantities of actual goods received. Also includes delivery receipts, packing lists, shipping records, count sheets and finalized updates.

Examples Include:
Delivery Receipt
Inspection Reports
Manifests
Packing Lists
Shipping Documentation (Product Returns)

ACT (Activity) Event:

The date that the record was created.

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Departmental and Project Management

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
DEP100	**Departmental Correspondence** Records related to correspondence records, primarily internal casual correspondence. This record class is only to be used for correspondence not covered elsewhere. **Examples Include:** Correspondence (General) **ACT (Activity) Event:** The date that the record was created.	MAX3		0		MAX3
DEP110	**Project Management (Internal Projects)** Records related to management of internal projects. Includes project plans, meeting minutes, status reporting, presentations, etc. **Examples Include:** Project Meeting Agenda Project Meeting Minutes Project Plans Project Presentations **ACT (Activity) Event:** The date the project is closed.	ACT+1		0		ACT+1
DEP120	**Departmental Policies and Procedures** Records related to guidelines and policies set forth by specific PTC department for their employees. **Examples Include:** Toll Collector Manuals **ACT (Activity) Event:** The date that the policy, program or procedure is either superceded or discontinued.	ACT+0		10		ACT+10

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG100	**Engineering Construction - General** Records related to the construction of roadways, bridges, corporate facilities and other structures. Includes estimates, sketch books, correspondence, and other supporting documents. See ENG110 for Engineering Construction - Federally Funded and ENG120 for Engineering Construction - Final. **Examples Include:** Concrete Books Contract Change Orders Correspondence Estimates Field Inspector Diaries Property Releases QA Reports Quantity Books Structure Pike Records Structure Stake Out **ACT (Activity) Event:** The date that the project is completed.	ACT+0		14		ACT+14
ENG110	**Engineering Construction - Federally Funded** Record related to the construction of roadways, bridges and other structures that are funded by the federal government. Includes final estimates, sketch books, correspondence and other supporting documents. See ENG100 for Engineering Construction - General and ENG120 for Engineering Construction - Final. **Examples Include:** Concrete Books Contract Change Orders Correspondence Estimates Field Inspector Diaries Property Releases QA Reports Quantity Books Structure Pike Records Structure Stake Out **ACT (Activity) Event:** The date that the project is completed.	ACT+0		14		ACT+14

Pennsylvania Turnpike Commission

Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG120	**Engineering Construction - Final** Records related to the final construction of roadways, bridges, corporate facilities and other structures. Includes final shop drawings and catalog cuts, contract specifications book and contract cost and summary analysis. These final documents and are maintained indefinitely. **Examples Include:** Contract Specifications Book Final Contract Cost and Summary Analysis Shop Drawings and Catalog Cuts **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND
ENG130	**Specifications Book** Records detailing the finalized construction specifications including contract, insurance, and payment information. Includes final contracts and addendums as well as contractor insurance, payment and surety bond records. **Examples Include:** Addendums Contractor Insurance Information Contractor Payment Information Contractor Surety Bonds Contracts **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND
ENG140	**Consultant Proposals - Rejected** Records related to rejected proposals submitted by engineering consultants. **Examples Include:** Letters of Interest (Consultants Not Selected) Technical Proposals (Consultants Not Selected) **ACT (Activity) Event:** The date of final submission.	ACT+1		0		ACT+1

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG150	**Contracts and Agreements** **Construction Consultants** Records related to agreements with external engineering consultants. Includes consultant agreements and consultant final invoices. **Examples Include:** Consultant Agreements Consultant Final Invoice Technical Proposals - Accepted **ACT (Activity) Event:** The date that the project is completed.	ACT+0		6		ACT+6
ENG160	**Master Diaries** Records of daily logs kept by engineering consultants detailing work schedules, equipment, weather, operations and other information. **Examples Include:** Master Diaries **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND
ENG170	**Construction Research** Records related to general technical reference materials used for construction projects. Includes technical reports, books, manuals and periodicals. **Examples Include:** Books Manuals Periodicals Reports **ACT (Activity) Event:** The date that the material is no longer required onsite or superceded.	ACT+0		IND		IND

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG180	**Materials Certification, Testing and Inspection** Records related to the testing, inspection and certification of materials used for concrete pavement. Includes records reporting on the composition, mixture, compaction and treatments of materials. **Examples Include:** Aggregates Gradiations Bituminous Records Concrete Records Delivery Tickets Earthwork Computations Embankment Compaction Test Materials Certification Mix Designs Test Reports **ACT (Activity) Event:** The date that the project is completed.	ACT+0		14		ACT+14

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG200	**Engineering Design - General** Records related to drawings and designs and related project information used to support the construction of roadways, bridges, corporate facilities and other structures. Includes correspondence, plans, calculations, reports, as-builts and shop drawings. See ENG100 for Engineering Construction - General. **Examples Include:** ACT287 Notification Consultant Approvals Correspondence - Liaison or Designer Files Correspondence - Master Files Cross Sections (As-Builts) Design Calculations Design Location Reports Drawings (Mylars) Feasibility Reports Inspection Sheets and Reports Meeting Minutes Plans (As-Builts) Quantity Calculations Shop Drawings Survey Books **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND
ENG210	**Engineering Design - Geotechnical** Records related to the geotechnical assessments of various construction of roadways, bridges and other structures. Includes geotechnical and foundation reports, structure boring sheets, typed boring logs and roadway reports. **Examples Include:** Miscellaneous Reports Roadway G.E.R. **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG220	**Engineering Design - Bridges/Structures** Records related to the design of bridges and structures. Includes bridge inspection sheets and reports and design calculations/computations. **Examples Include:** Bridge Inspection Reports Bridge Inspection Sheets Design Calculations/Computations Geotechnical and Foundation Reports Structure Boring Sheets Typed Boring Logs **ACT (Activity) Event:** Completion of the bi-annual bridge inspection program.	ACT+0		IND		IND
ENG230	**Engineering Design - Roadway** Records related to the planning and design of roadways to be constructed by the PTC. Includes standard and CADD drawings, mosaics and contours. **Examples Include:** 1968 Contours CADD Drawings Mosaics Old Standard Drawings Standard Drawings **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG240	**Traffic Studies and Plans** Records related to approved traffic studies and plans relating to traffic signal and other traffic control device installations. **Examples Include:** Dates of Installation Records Engineering and Traffic Studies Final Surveys Plan Sheets for Signal or Signing Projects Study Data Traffic and Revenue Studies Traffic Control Device Requests **ACT (Activity) Event:** The date of final submission.	ACT+3		IND		IND
ENG250	**Traffic Route Numbers** Records related to studies associated with the adding or changing of traffic route numbers reported to PADOT (Pennsylvania Department of Transportation) and FHWA (Federal Highway Association). **Examples Include:** Studies Traffic Route Number Requests **ACT (Activity) Event:** The date of final submission.	ACT+3		IND		IND
ENG260	**Engineering Design - Traffic Procession, Assemblages, and Special Events** Records related to requests and approval for processions, assemblages, and other special events on highways, bridges, etc., operated by the PTC. **Examples Include:** Approvals Requests Study Data **ACT (Activity) Event:** The date that the project is completed.	ACT+3		0		ACT+3

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG270	**Engineering Design - Traffic** **Removal of Traffic Hazards** Records related to the request and approval to remove various traffic hazards. **Examples Include:** Traffic Hazard Analysis **ACT (Activity) Event:** The date that the record was created.	2		0		2
ENG280	**Engineering Design - Traffic** **Traffic Reporting** Records detailing the tracking of traffic volumes and flow, accidents, capacity and related analysis. **Examples Include:** Origin Destinations Reports Traffic Control Projects Traffic Flow Reports **ACT (Activity) Event:** The date that the record was created.	3		IND		IND

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG290	**Engineering Design - Utilities** Records related to the relocating and/or adjusting of utility facilities such as gas, petroleum, water, telephone, sanitary sewage and electric which is affected by highway construction or reconstruction. **Examples Include:** Affidavits Certification of Utility Completion Estimate Permit Transmittal Lump Sum Estimate with Supportive Information Preliminary Estimate with Supportive Information Project Utility Relocation - Estimates Proof of Private Right of Way Summary of Billing and Supportive Documentation Utility Clearance Forms Utility Inspection Reports Utility Relocation Questionnaires Utility Relocation Unit - Clearance Forms **ACT (Activity) Event:** The date that the project is completed.	ACT+3		11		ACT+14
ENG300	**Engineering Design - Utilities** **Utility Approval and Agreements** Records documenting final approval and agreements between the PTC and the utility organization. Includes regulatory orders from the PUC, approvals from both parties, agreements of reimbursement and resolutions. Also includes utility plans indicating relocation/adjustments and occupancies and documentation for the establishment of utility corridors. **Examples Include:** Agreement of Reimbursements Bridge Occupancy Agreements Commission Approval Consultant/Utility Agreements Cost Sharing - Approvals/Rejections PUC Orders **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG310	**Engineering Permits** Records related to the permits required in the design and construction of highways. Includes highway occupancy, letter of authorization permits and other related permits. **Examples Include:** Letter of Authorization Permits Permits - Highway Occupancy **ACT (Activity) Event:** The date that the permit expires.	ACT+0		3		ACT+3
ENG320	**Property Acquisitions/Right of Way** Records relating to the purchase of property and the granting of right of way (from individual property owners) necessary when the PTC is building new highways or adding to existing ones. Includes negotiations reports, purchase/sales agreements, settlement documents, deeds, calculations, relocation records, title work, appraisals and other supporting records. **Examples Include:** Calculations Condemnation Plans Deeds Final R/W Plans Horizontal and Vertical Control Reports Mapping Purchase/Sales Agreements Relocation Records Settlement Documents Survey Books Title Work Viewer's Plans **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

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Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG330	**Milepost Folders** Records documenting issues occurring at mileposts such as drainage problems, customer stormwater reviews and miscellaneous issues. **Examples Include:** Correspondence Files Drainage Complaints Stormwater Plans and Review Files **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
ENG340	**Environmental Reporting** Records that support the environmental issues needed on a particular site to be created, managed, and/or submitted by the Commission to governmental agencies (FHWA, PENDOT, PADEP) in order to comply with state/federal environmental requirements. **Examples Include:** Air Quality Analysis Report Criteria of Effects Report Detailed Site Investigation Report Determination of Eligibility Report Farmlands Assessment Report Habitat Evaluation Report Memorandum of Agreement Needs Analysis Noise Analysis Report Noise Complaint Letters Phase I, II, II Archeological Survey Report Preliminary Alternatives Analysis Reports Preliminary Area Reconnaissance Reports Technical Files and Memos Water Quality and Aquatic Biota Report Wetlands Delineation Report Wetlands Functional Assessment Reports Wetlands Mitigation Site Selection Reports **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND

Pennsylvania Turnpike Commission

Engineering Design and Construction

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG350	**Environmental Impact and Assessment** Documents required by federal and state agencies for major construction projects that significantly affect the environment. Includes environmental overview report, categorical exclusion evaluation, environmental assessments, and environmental impact statements. **Examples Include:** Categorical Exclusion Evaluation Environmental Assessments Environmental Impact Statements Environmental Overview/Report **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND
ENG360	**Environmental Permits** Records related to environmental permits and licenses required by federal and state environmental agencies. Includes supporting documentation used to obtain the permit or license. **Examples Include:** Dam Safety Permits NPDES Permit PADEP Permits (Chapter 105) Permit Applications Stream Mitigation Design U.S. Army Corp of Engineers Section 404 Permits Wetlands Mitigation Design **ACT (Activity) Event:** The date that the project is completed.	ACT+0		IND		IND

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Fare Collections

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
FAR100	**Fare Collection Tickets** Records of actual fare collection tickets collected at toll booths. **Examples Include:** Tickets **ACT (Activity) Event:** The date that the record was created.	3		1		4
FAR110	**Fare Schedules** Historical records indicating toll collection fares. **Examples Include:** Fare Schedules **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
FAR120	**Toll Collector Schedules** Records related to the staffing and work schedules of toll collectors. **Examples Include:** Toll Collector Schedules **ACT (Activity) Event:** The date that the record was created.	3		0		3

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Fare Collections

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
LR100	**Labor Relations** **Labor Grievances - Departmental (Step 1)** Records related to complaints filed by labor union employees against the PTC. These grievances are resolved within the employee's department and are not escalated to the human resources or legal departments. Includes grievances, correspondence and supporting documents. See HE230 for labor grievances handled by the HR department and LE110 for labor grievances handled by the legal department. **Examples Include:** Correspondence Labor Grievances Supporting Documents **ACT (Activity) Event:** The date that the record was created.	3		2		5

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Pennsylvania Turnpike Commission

Finance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
FN100	**Bad Debts and Collections** Records related to the monitoring, collecting, and writing off of bad debts. Includes authorizations and supporting details of uncollectible accounts. **Examples Include:** Collection Notices **ACT (Activity) Event:** The date that the record was closed.	ACT+2		2		ACT+4
FN110	**Banking** **Account Reconciliation** Records related to analysis and audit of the PTC's bank accounts. These records support the monthly account reconciliation process and are used to document reconciliations that develop from that analysis. Includes account statements and reconciliations. **Examples Include:** Bank Account Reconciliations Bank Account Statements **ACT (Activity) Event:** Retain two years from the date that the record was created.	ACT+2		2		ACT+4
FN120	**Banking** **Cancelled Checks and Registers** Records related to cancelled checks and check registers for corporate accounts. These records are used to verify the receipt of funds by a third party and the debit of cash from the corporate account. Includes cancelled checks and check registers. **Examples Include:** Cancelled Checks Check Copies Check Registers **ACT (Activity) Event:** Retain two years from the date that the record was created.	ACT+2		2		ACT+4

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Finance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
FN130	**Banking** **Bank Account Set-up and Management** Records related to the setup and management of the Commission's accounts. Includes bank account files. **Examples Include:** Bank Account Files **ACT (Activity) Event:** The date that the record was created.	2		2		4
FN140	**Banking** **Deposits and Wire Transfers** Records related to deposits and wire transfers made to and from corporate accounts. These records are used to verify the transfer and deposit of funds. Includes deposit slips, wire transfer records and automatic clearing house paments. **Examples Include:** ACH Payment Requests ACH Payments Deposit Letters Deposit Slips Wire Transfer Notifications Wire Transfers **ACT (Activity) Event:** Retain two years from the date that the record was created.	ACT+2		2		ACT+4

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Finance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
FN150	**Budgets and Financial Forecasts** Records related to budgeting activities. Includes final budgets, budget workpapers, and actual versus budget comparisons. **Examples Include:** Actual to Budget Reports Budget Workpapers Budgets Capital Budgets G&A Reports Operating Budgets **ACT (Activity) Event:** The date that the record was created.	5		0		5
FN160	**Cash Management** Records related to the analysis, forecasting, and disposition of the Commission's cash balances. Includes records used to determine actual and future cash balances, as well as records related to analysis of the PTC's borrowing strategies and investment strategies. **Examples Include:** Cash Forecasting Records Cash Investment Analysis Cash Management Reviews **ACT (Activity) Event:** The date that the record was created.	2		2		4
FN170	**Customer Credit Files** Records related to customer credit applications, agreements and financing arrangements for commercial and other customer accounts. Includes credit applications, credit reports and surety bonds. **Examples Include:** Credit Agreement Credit Applications -- Accepted Credit Reports Surety Bonds **ACT (Activity) Event:** The date the loan is paid off.	ACT+3		1		ACT+4

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Finance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
FN180	**External Financing** **Federal Grants** Records related to the applications, issuance, management and administration of loans to the Commission from federal funding. Includes correspondence, reports and workpapers. **Examples Include:** Correspondence Reports Workpapers **ACT (Activity) Event:** The date the financing efforts are concluded.	ACT+3		1		ACT+4
FN190	**Investment Management** Records documenting investments in stocks, bonds, mutual funds, etc. Includes proof of ownership, purchase information, annual statements and investment results. **Examples Include:** Correspondence Investment Policy Committee Investment Portfolio Records Investment Schedules Investments, Supporting Documents **ACT (Activity) Event:** The date the investment account is closed.	ACT+3		1		ACT+4
FN200	**Management Reporting** Reports and documents providing useful sales, accounting, financial, and inventory information to management. These records are not part of accounting transaction processing or financial statement functions. **Examples Include:** Monthly Reports Statistics Report by Quarter Status Reports **ACT (Activity) Event:** The date that the record was created.	MAX3		0		MAX3

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Finance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
FN210	**Financial External Audits** Records related to accounting audits performed by external auditors. Includes audit reports, workpapers and responses. **Examples Include:** Audit Reports Audit Responses Audit Workpapers **ACT (Activity) Event:** Retain two years from the date that the record was created.	ACT+2		2		ACT+4

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Pennsylvania Turnpike Commission

Health & Safety

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
SF100	**Highway Safety Incidents** Records tracking fire, EMS and authorized service incidents. Includes daily and monthly reports summarizing when and how vehicles were dispatched. **Examples Include:** Fire, EMS and Authorized Service Usage Reports **ACT (Activity) Event:** Retain one year from the date the record was created.	ACT+1		3		ACT+4
SF110	**Safety Policies and Procedures** Records documenting the guiding principles (policy) and procedures required by the safety department. Includes safety manuals and related documentation. See TR120 for Commission Policies and Procedures. **Examples Include:** Safety Handbooks **ACT (Activity) Event:** The date the policy, programs or procedure is either superceded or discontinued.	ACT+0		10		ACT+10

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Pennsylvania Turnpike Commission

Human Resources -- Benefits

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HB100	**Benefit Administration** Records related to the general management and administration of corporate benefit plans. Includes plan-related and vendor correspondence and general employee communications. See HB110 for Retirement Plan Administration. **Examples Include:** Benefit Analysis Benefit Claims Administration Correspondence **ACT (Activity) Event:** The date that the record was created.	2		4		6
HB110	**Benefit Administration** **Retirement Plan Administration** Records related to the management and administration of corporate employee retirement programs. Contains trust reconciliations, 5500's, annual audit papers, annual valuation reports and correspondence. **Examples Include:** 5500 Forms Annual Audit Workpapers Annual Valuation Report Correspondence Trust Reconciliation **ACT (Activity) Event:** The date that the record was created.	2		4		6

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Human Resources -- Benefits

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HB130	**Benefit Enrollment and Participation Disability Benefits** Records related to the application of continuing benefits distributed under commission-sponsored disability benefit plans. **Examples Include:** Applications Correspondence with Physician Disability Review Information Doctor's Statement Long-term Benefit Calculation **ACT (Activity) Event:** The date that the record was created.	2		4		6
HB140	**Benefit Enrollment and Participation Loan Applications** Records related to money borrowed by an employee against their retirement plan. **Examples Include:** Correspondence Loan Application **ACT (Activity) Event:** The date the loan is paid off.	ACT+2		4		ACT+6
HB150	**Benefit Plan Texts and Amendments** Records related to Commission-sponsored benefit plans. Includes insurance, pension, disability, vacation entitlements, educational assistance, savings plans, and any seniority or merit systems. **Examples Include:** Amendments Plan Documentation **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

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Human Resources -- Benefits

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HB160	**Benefit Plan Analysis and Reporting** Records related to the analysis and reporting of benefit plan medical and drug utilization. Includes prescription reports, COBRA reports, and related analysis. **Examples Include:** COBRA Reports Prescription Utilization Reports **ACT (Activity) Event:** The date that the record was created.	2		4		6

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Human Resources -- Employment

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HE100	**Compensation Planning** Records documenting the determination and monitoring of salary structures, incentive programs, job classification and placement, allowances, etc. Includes payscales, salary surveys and other salary administration evaluations. **Examples Include:** College Recruiting Starting Salary Guidelines Job Evaluation Documents Wage and Benefit Surveys **ACT (Activity) Event:** The date that the record was created.	5		0		5
HE120	**Employee Recruitment and Selection Drug and Alcohol Testing** Records related to drug and alcohol screenings required by all individuals applying for a position at the PTC. **Examples Include:** Chain of Custody Form Test Results **ACT (Activity) Event:** The end of the calendar year in which the record was created.	ACT+1		0		ACT+1
HE130	**Employee Recruitment and Selection Rejected** Records related to personnel requests, job applications testing, advertising, position descriptions, interviews, etc. Applicants include employees who apply for open positions. **Examples Include:** Applications Candidate Evaluations Help Wanted Ads Job Posting Personnel Requisitions Resumes **ACT (Activity) Event:** The date the record was created.	2		0		2

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Human Resources -- Employment

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HE140	**Employee Recruitment and Selection** **Skills Assessment** Records related to the testing of an applicant's skillset. **Examples Include:** Test Results **ACT (Activity) Event:** The date that the record was created.	3		0		3
HE150	**Employee Situations** **Non-Union** Records related to employees concerns, complaints, employee assistance programs, referrals and disciplinary records. See EO140 for Employee Investigations and HE230 for Labor Grievances. **Examples Include:** Disciplinary Records Manager Notes **ACT (Activity) Event:** The date that the record was created.	3		2		5
HE160	**Immigration and Naturalization** Records and correspondence related to immigration and naturalization of employees transferring to and from Company facilities. Includes federal Form I-9 which certifies employee identity and eligibility as a US citizen. **Examples Include:** Form I-9 **ACT (Activity) Event:** The end of the calendar year in which the employee leaves employment.	ACT+3		0		ACT+3

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Human Resources -- Employment

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HE170	**Job Descriptions** Records related to job descriptions. **Examples Include:** Job Descriptions **ACT (Activity) Event:** The date that the job description is superceded.	ACT+1		9		ACT+10
HE180	**Personnel Files** Records regarding employees beginning with their initial hire. Includes hiring promotion, performance appraisals transfers, etc. These records provide a history of employment. **Examples Include:** Address Changes Applications College Transcripts Continuing Education Records Employee Agreements Letter of Acceptance Performance Appraisals References Resumes **ACT (Activity) Event:** The end of the calendar year in which the employee leaves employment.	IND		0		IND
HE200	**Organization Charts** Records showing the structure of the organization including the positions, titles and employee names. **Examples Include:** Organization Charts (Commission-wide) Organization Charts (Departmental) **ACT (Activity) Event:** The date that the record was created.	SUP		0		SUP

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Human Resources -- Employment

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HE210	**Labor Relations** **Labor Unit Bargaining Relationship** Records applicable to the Bargaining Unit relationship. Includes seniority listings, bulletins, notes of meetings with locals, etc. **Examples Include:** Bulletins Meeting Minutes Seniority Listings **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
HE220	**Labor Relations** **Labor Contracts and Agreements** Records related to agreements between the Commission and labor unions. Includes labor union contracts, contract negotiations and collective bargaining agreements. **Examples Include:** Collective Bargaining Agreements Contract Negotiations Labor Union Contracts **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
HE230	**Labor Relations** **Labor Grievances - Human Resources (Step 2)** Records related to grievances filed by labor union employees against the PTC. These are grievances that can not be resolved within the originating department and as a result are escalated to Human Resources. Includes grievances, correspondence and supporting documents. See LR100 for labor grievances handled at the departmental level and LE110 for labor grievances handled by the legal department. **Examples Include:** Correspondence Labor Grievances Supporting Documents **ACT (Activity) Event:** The end of the calendar year in which the record was created.	3		7		10

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Human Resources -- Training

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
HT100	**Training and Development Programs** Records related to the development and operation of Commission-sponsored training programs and seminars. Includes seminars, education assistance, management and supervision development, job progression, drug and alcohol awareness. See EO130 for Sexual Harassment Training. **Examples Include:** Course Evaluation Summaries Course Manuals Course Schedules **ACT (Activity) Event:** The date the program is superceded or is no longer available to employees	ACT+3		0		ACT+3
HT110	**Training Attendance and Certification** Records which document the attendance at Commission and vendor-sponsored training programs and seminars. Includes attendance and completion records. Includes records related to certification for individuals to perform certain tasks. **Examples Include:** Course Sign-In Sheets Employee Training Requirements/Record **ACT (Activity) Event:** The date the program is superceded or is no longer offered to employees.	ACT+3		0		ACT+3

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Information Technology

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IT100	**Application Documentation** Records used to document the development of new functionality and architecture for Commission computer systems and applications. Includes business analysis, functional/technical specifications, and quality assurance testing documents. See IT120 for Source Code. **Examples Include:** Data Models Object Models Process Models Programming Design Specifications Programming Standards Requirement Documents Scope Documents Technical Design Documents User Acceptance Results User Acceptance Test Plans User Requirements **ACT (Activity) Event:** The date the hardware or software is superceded or is no longer in use.	ACT+1		0		ACT+1
IT110	**Contracts and Agreements** **Software Licenses and Escrow Agreements** Records that document the licensing of software applications and systems hardware for use by the Commission. Includes software escrow agreements, licenses and correspondence. **Examples Include:** Escrow Agreements External Correspondence Internal Correspondence Licenses **ACT (Activity) Event:** The date the hardware or software is superceded or is no longer in use.	ACT+6		0		ACT+6

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Information Technology

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IT120	**Source Code** Source code for Commission-owned software that is either internally or externally developed, and which is used internally by employees. See IT100 for Application Documentation. **Examples Include:** Source Code **ACT (Activity) Event:** The date the hardware or software is superceded or is no longer in use.	ACT+1		0		ACT+1
IT130	**System Technical Administration** Information used to provide details and a history of the technical environment including hardware and operating software specifications and configuration details, vendor documentation, space layouts of the data center and other equipment locations. Also included are documents reflecting cabling connections, wiring diagrams, and data center environmental equipment such as electrical and air conditioning settings and configurations. **Examples Include:** and configuration Asset Tracking/Inventory cartridges, and print bands. Change Documentation components such as ribbons, toner Mainframe and LAN server hardware manuals manuals and configuration. number listings for replaceable Printer manuals and configurations, including part Vendor operating system and associated software **ACT (Activity) Event:** Retain two years from the date the hardware or software is superseded or no longer in use.	ACT+2		0		ACT+2

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Information Technology

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IT140	**Technical Support Requests** Documents that chronicle employee requests for technical support. These records identify the caller's concern or request for information and identify the Commission's response and resolution. **Examples Include:** Problem Tracking Documentation **ACT (Activity) Event:** The date that the record was created.	3		0		3
IT150	**Year 2000 Compliance** Documentation illustrating the necessary and reasonable steps taken to make the Commission's business and systems processes Year 2000 compliant. Also includes records documenting and certifying compliance of vendor/partner systems. **Examples Include:** Change Documentation Compliance Certification Supplier Lists Systems Inventory Test Documentation Test Plans Test Results Y2K Disclosure Statements **ACT (Activity) Event:** January 1, 2000	ACT+0		6		ACT+6

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Information Technology

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IT160	**System Production Operations** Information describing the production processing performed including activity logs, problems, operational status, and jobs requested. Include all production mainframe and LAN server processing. **Examples Include:** Capacity and Availability Documents Data Center Access Logs Job Transmittals Performance Reports Problem Logs **ACT (Activity) Event:** The date the record was created.	ACT+2		0		ACT+2

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Internal Audit

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IA100	**Operations Audits** Records related to various audits of systems and/or business processes within the PTC. See FN210 for Financial External Audits. **Examples Include:** Audit Workpapers Audits **ACT (Activity) Event:** The date that the audit is finalized.	ACT+3		0		ACT+3
IA110	**Operations Audits** **Bank Reconciliation** Records related to the audit and reconciliation of the following Commission bank accounts: Payroll, Special Account #14, Maintenance Revolving Fund and Change Fund. See FN110 for other Banking Account Reconciliation. **Examples Include:** Bank Account Reconcilations **ACT (Activity) Event:** The date that the audit is finalized.	ACT+3		0		ACT+3
IA120	**Operations Audits** **Payroll and Cash Disbursement Audits** Records related to audit testing of payroll and cash disbursement function in preparation for external auditors. **Examples Include:** Cash Disbursement Tests Payroll Tests **ACT (Activity) Event:** The date that the audit is finalized.	ACT+3		0		ACT+3

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Pennsylvania Turnpike Commission

Internal Audit

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IA130	**Operations Audits** **Commission Agenda Review** Records related to the review of materials/items put on Commission meeting agendas. **Examples Include:** Minutes/Agenda Backup **ACT (Activity) Event:** The date that the record was approved by the Commission.	ACT+1		0		ACT+1
IA140	**Operations Audits** **Concessionaire & Compliance Audits** Records related to annual audits of concessionaires to ensure compliance with contracts and leases. **Examples Include:** Closeout Letters Concessionaire Compliance Audits Summary Memos **ACT (Activity) Event:** The date that the audit is finalized.	ACT+3		0		ACT+3
IA150	**Operations Audits** **External Consultants Audits** Records documenting internal audits performed on external contractors/consultants hired by the PTC to ensure compliance with provisions of contracts. **Examples Include:** Audit Results **ACT (Activity) Event:** The date that the audit is finalized.	ACT+3		0		ACT+3

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Internal Audit

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
IA160	**Systems Audits** **Monthly Charge Card Billings** Records related to the reconciliation and audit of customer accounts. Includes audits ensuring compliance with contracts and account reconciliations. **Examples Include:** Audit Findings/Results **ACT (Activity) Event:** The date that the record was created.	3		0		3
IA170	**Systems Audits** **Toll Collections** Records related to daily audits of toll collections. Includes reconciliation of tickets, cash, and other transactions generated during a toll collector's shift. **Examples Include:** Daily Audits **ACT (Activity) Event:** The date that the record was created.	0Y6M		2Y6M		3
IA180	**Business Continuity** Documentation of plans which would be implemented in the event of a disaster or systems failure. Includes contact persons, backup sites and instructions for personnel. **Examples Include:** Disaster Recovery Plan Y2K Contingency Plan **ACT (Activity) Event:** The date the business continuity plan is superceded or is no longer in effect.	ACT+0		10		ACT+10

Pennsylvania Turnpike Commission

Legal

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
ENG320	**Property Acquisitions/Right of Way** Records relating to the purchase of property and the granting of right of way (from individual property owners) necessary when the PTC is building new highways or adding to existing ones. Includes negotiations reports, purchase/sales agreements, settlement documents, deeds, calculations, relocation records, title work, appraisals and other supporting records. **Examples Include:** Calculations Condemnation Plans Deeds Final R/W Plans Horizontal and Vertical Control Reports Mapping Purchase/Sales Agreements Relocation Records Settlement Documents Survey Books Title Work Viewer's Plans **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
HE220	**Labor Relations** **Labor Contracts and Agreements** Records related to agreements between the Commission and labor unions. Includes labor union contracts, contract negotiations and collective bargaining agreements. **Examples Include:** Collective Bargaining Agreements Contract Negotiations Labor Union Contracts **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

Pennsylvania Turnpike Commission

Legal

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
LE100	**Litigation and Claims** Records related to threatened or asserted litigation or government investigation. Includes pleadings, discovery, attorney work products, legal opinions, transcripts and exhibits. Includes final judgments, settlements, court orders and other documents specifying final terms, conditions and decisions related to claims and litigation. **Examples Include:** Correspondence Court Orders Depositions Discovery Documents Judgments Pleadings Settlement Agreements **ACT (Activity) Event:** The date the litigation or claim closes and that litigation no longer seems imminent.	ACT+1		5		ACT+6
LE110	**Labor Relations** **Labor Grievances - Legal (Step 3)** Records related to grievances filed by labor union employees against the PTC. These are grievances that are handled by the legal department. Includes grievances, correspondence and supporting documents. See LR100 for labor grievances handled at the departmental level and HE230 for labor grievances handled by the HR department. **Examples Include:** Correspondence Labor Grievances Supporting Documents **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

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Pennsylvania Turnpike Commission

Legal

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
LE115	**Labor Relations** **Labor Arbitration (Step 4)** Records containing details regarding unsettled labor controversies which are presented to an arbitrator. See LE110 for Labor Grievances. **Examples Include:** Correspondence **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
LE120	**Copyrights, Patents and Trademarks** Records related to the preparation, filing, maintenance and rights of copyrights, trademarks and patents. **Examples Include:** Copyrights Patents Trademark Registration and Related Correspondence Trademark Search Reports Trademarks **ACT (Activity) Event:** The date the copyright, patent or trademark is superceded or no longer in effect.	ACT+1		5		ACT+6
LE130	**Legal Projects** Legal opinions and related workpapers. Includes employee matters, insurance consultation for contracts and agreements, etc. Excludes legal opinions documenting specific litigation. **Examples Include:** Employee Matter Files Insurance Consultation Files Legal Opinions Legal Work Papers **ACT (Activity) Event:** The date the project concludes.	ACT+10		0		ACT+10

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Pennsylvania Turnpike Commission

Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
LR100	**Labor Relations** **Labor Grievances - Departmental (Step 1)** Records related to complaints filed by labor union employees against the PTC. These grievances are resolved within the employee's department and are not escalated to the human resources or legal departments. Includes grievances, correspondence and supporting documents. See HE230 for labor grievances handled by the HR department and LE110 for labor grievances handled by the legal department. **Examples Include:** Correspondence Labor Grievances Supporting Documents **ACT (Activity) Event:** The date that the record was created.	3		2		5
MA100	**Equipment - Capital Purchasing** Records which track equipment purchased. These records are used to project future capital purchases of equipment and are not actual purchase orders. See PU100 for Purchasing Orders and Agreements. **Examples Include:** Capital Purchases Projection of Purchasing Equipment Purchase Specifications **ACT (Activity) Event:** The date that the record was created.	4		0		4
MA110	**Equipment/Vehicle Specifications** Records detailing the specification of vehicular and other equipment utilized by the Maintenance Department. **Examples Include:** Equipment Specifications **ACT (Activity) Event:** The date the equipment or vehicle is no longer in use.	ACT+0		6		ACT+6

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Pennsylvania Turnpike Commission

Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MA120	**Equipment/Vehicle Ownership** Ownership records of equipment and vehicles owned and operated by the Maintenance Department. Includes license information, titles and inspection records. **Examples Include:** Equipment License Information Inspection Records Titles **ACT (Activity) Event:** The date the equipment or vehicle is no longer in use.	ACT+0		6		ACT+6
MA130	**Equipment/Vehicle Inventory** Records which document vehicle inventory owned and operated by the PTC. Includes location information and inventory listings. **Examples Include:** Inventory Lists Location Information **ACT (Activity) Event:** The date that the record was created.	ACT+1		0		ACT+1
MA140	**Equipment/Vehicle Inspection** Records related to the inspection of new equipment and components. Includes Inspection Reports. **Examples Include:** New Equipment and Component Inspection Reports **ACT (Activity) Event:** The date the equipment or vehicle is no longer in use.	ACT+2		4		ACT+6

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Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MA150	**Equipment/Vehicle History** Record related to the maintenance history of vehicles owned and operated by the PTC. Includes historical information regarding repairs, transfers and other mileage information. **Examples Include:** Equipment Fuel Costs (PTC Form 63-15) Inspection Records Monthly Mileage and Operations Reports Operator Daily Logs/Equipment Checklists Preventative Maintenance Rentals Repairs (PTC 63-52, Equipment Repair and Labor Costs) Transfers **ACT (Activity) Event:** The date the equipment or vehicle is no longer in use.	ACT+1		5		ACT+6
MA160	**Automated Fuel Dispensing** Records that document how much diesel and gas was dispensed to vehicles at fuel locations. **Examples Include:** System Reporting **ACT (Activity) Event:** The date that the record was created.	2		0		2
MA165	**Corporate Item Maintenance Form** Records used when requesting a corporate item identification number for a new inventoried item or change to an existing corporate number. **Examples Include:** Corporate Item Maintenance Form **ACT (Activity) Event:**	IND		0		IND

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Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MA170	**Fuel Credit Cards** Records related to the administration and use of fuel credit cards. Includes records that track who has credit cards. **Examples Include:** Credit Card Maintenance Credit Cards **ACT (Activity) Event:** The date that the record was created.	2		0		2
MA180	**Maintenance Manuals and Policy Letters** Manuals and policy letters providing guidance and procedures pertaining to the use and maintenance of vehicles by employees. **Examples Include:** Fleet Operations Manual PTC Vehicle Policy Letter Written Driver's Manual **ACT (Activity) Event:** The date that the manual is superceded or no longer in use.	ACT+0		10		ACT+10
MA185	**Request for Disposal** Records used when any material or equipment inventoried or non-inventoried is identified for disposal. **Examples Include:** Request for Disposal Form **ACT (Activity) Event:** The date of disposal.	ACT+7		0		ACT+7

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Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MA190	**Equipment Incident Reports** Records related to the reporting and documentation of equipment vandalism, accidents or other incidents. **Examples Include:** Accident Reports Vandalism Reports **ACT (Activity) Event:** The date that the record was created.	3		0		3
MA200	**Inventory and Disposition Reporting - Tools** Records related to the tracking of tool inventory. Includes records of when the tools were disposed. **Examples Include:** Inventory and Disposition Reports **ACT (Activity) Event:** The date that the tools are disposed of.	ACT+1		0		ACT+1
MA210	**Equipment Certification and Licensing** Records related to the certification and licensing of maintenance personnel to operate equipment. **Examples Include:** Testing Records Training Records **ACT (Activity) Event:** The date the employee leaves employment.	ACT+0		3		ACT+3
MA220	**Driver's License Checks** Records related to license checks on maintenance employees who will be operating PTC vehicles. **Examples Include:** Driver's License Checks **ACT (Activity) Event:** The date that employment terminates.	ACT+1		2		ACT+3

Pennsylvania Turnpike Commission

Maintenance

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MA230	**Annual Maintenance Work Plan** Records documenting annual maintenance work plans for ongoing maintenance to highways and facilities. **Examples Include:** Yearly Maintenance Plan **ACT (Activity) Event:** The end of the fiscal year in which the work was created.	ACT+6		0		ACT+6
MA240	**Work Schedules** Records tracking the work schedules of maintenance personnel for work performed on emergency response, winter patrol and tunnel operations. **Examples Include:** Emergency Response Personnel Work Schedules Tunnel Operation Work Schedule Winter Patrol Work Schedule **ACT (Activity) Event:** The date that the record was created.	3		0		3
MA250	**Work Order Requests** Records that document what type of maintenance work was performed on roadways, bridges, service plazas, interchanges, etc. Identifies who performed the work and when it was completed. **Examples Include:** Supporting Documentation Work Orders **ACT (Activity) Event:** The date that the work is completed.	ACT+0		6		ACT+6

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Pennsylvania Turnpike Commission

Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MA260	**Roadway Maintenance** Records summarizing maintenance of Turnpike roadways including landscaping, line painting, snow removal, vegetation control and cracked ceiling. **Examples Include:** Delaware River Bridge Maintenance Reports Landscaping Reports Lime Painting Reports Night Lighting Overtime Reports Spill Reports Winter Storm Reports Work Project Reports **ACT (Activity) Event:** The date that the work is completed.	ACT+0		6		ACT+6
MA270	**Tunnel Operating Reporting** Records related to the operations of tunnels on PTC roadways. Includes checking in/out logs. **Examples Include:** Checking In/Out Logs **ACT (Activity) Event:** The date that the record was created.	3		0		3
MA280	**Access and Security** Records granting access to personnel and other individuals to PTC facilities and roadways. Includes access and control reports, requests for keys, visitor logs, and ID badge lists. **Examples Include:** Access and Control Reports ID Badge Lists Request for Keys Visitor Logs **ACT (Activity) Event:** The date that the record was created.	3		0		3

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Pennsylvania Turnpike Commission

Maintenance

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
RM130	**Insurance Claims** **Property Damage Claims** Records related to claims filed for physical damage, loss of property, or loss of the property's income producing abilities. See RM120 for General Liability Claims and RM140 for Worker's Compensation Claims. **Examples Include:** Accident Review Board Documentation Disciplinary Board Documentation Police Reports Property Damage Claims Safety Advisor Reports **ACT (Activity) Event:** The date that the record was created.	3		3		6

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Pennsylvania Turnpike Commission

Marketing and Customer Service

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MK100	**Advertising** Original artwork created by the Commission or external agencies in the development of an advertising or marketing campaigns. Includes photographs, layouts, displays and drawings. **Examples Include:** Artwork Correspondence Drawings Layouts Photographs Vendor Information **ACT (Activity) Event:** The date that the record was created.	3		3		6
MK110	**Customer Relations** Records related to customer issues, business dealings and the actions taken by the PTC. Includes customer correspondence. **Examples Include:** Complaint Letters Compliment Letters Customer Correspondence Requests for Information Responses **ACT (Activity) Event:** The date that the customer relationship terminates.	ACT+6		0		ACT+6
MK120	**Business Development** Records related to marketing development activities used to obtain new business for Service Plazas. Includes marketing plans and promotional materials. **Examples Include:** Product Marketing Plans Promotional Materials **ACT (Activity) Event:** The date that the material is no longer useful.	ACT+3		0		ACT+3

Pennsylvania Turnpike Commission

Marketing and Customer Service

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MK130	**Marketing Research and Analysis** Records related to the development, administration and analysis of market research. Includes research reports, and competitive information. **Examples Include:** Competitive Information Research Reports **ACT (Activity) Event:** The date that these records are no longer useful.	ACT+3		0		ACT+3
MK140	**Internal Employee Communications** Copies of employee announcements and other communications, policies, in-house magazines, special events and civic activities. Includes records related to informative communications to employees such as newsletters and intranet site information. **Examples Include:** Company Newsletter Corporate Intranet **ACT (Activity) Event:** The date that the record was created.	3		0		3
MK150	**Legislative Issues** Records related to the PTC's involvement in legislative issues or the passing of bills. Includes responses from the PTC on how certain issues were handled. **Examples Include:** Legislative Bills Responses **ACT (Activity) Event:** The date that the record was created.	5		0		5

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Pennsylvania Turnpike Commission

Marketing and Customer Service

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MK160	**Public Information** **Public Relations** Records related to service and product information that is released to the public. Includes records related to marketing and promoting the Commission's image, and activities such as press releases, web site information and photographs. **Examples Include:** Interviews New Clips Newspapers Press Releases Web Site Information **ACT (Activity) Event:** The date that the record was created.	3		0		3
MK170	**Public Information** **Industry Relations** Records documenting the Commission's relations and interactions with other companies or industries. Includes communication and correspondence with other companies/industries. Includes records documenting PTC participation in industry and professional organizations. Includes cooperative development of industry-wide standards. **Examples Include:** Correspondence (Industry) Industry Relations **ACT (Activity) Event:** The date that these records are no longer useful.	ACT+0		0		ACT+0

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Pennsylvania Turnpike Commission

Marketing and Customer Service

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
MK180	**Public Information** **Community Relations** Records documenting the Commission's relationship with the communities in which it operates. Includes communication and correspondence with communities. Includes records about charitable contributions, civic organizations and community events. **Examples Include:** Community Relations Records Correspondence (Communities) **ACT (Activity) Event:** The date that the record was created.	3		0		3

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Pennsylvania Turnpike Commission

Office of Equal Opportunity Development

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
EO100	**ADA Requests** Records of employees with disabilities who request special accommodations to better perform their job. Includes letters from physicians and other supporting documentation. See HE110 for Employee Medical Records. **Examples Include:** ADA Requests Physician Letters Supporting Documents **ACT (Activity) Event:** The date that employment is terminated.	ACT+0		5		ACT+5
EO110	**Certified Payrolls** Records ensuring labor compliance as governed by the Bureau of Labor Law. Bureau reviews payrolls to ensure fair pay/wages and benefits are in accordance with union contracts. **Examples Include:** Certified Payrolls Prevailing Wage Reports **ACT (Activity) Event:** For federally funded projects, the date that the project is completed.	ACT+7		0		ACT+7
EO120	**Equal Opportunity Reporting** Records documenting the PTC's compliance with its equal employment policies. Includes reports which the company is required to file with the Equal Employment Opportunity Commission identifying the composition of the workforce. **Examples Include:** EEO-4 Reports Supporting Documents **ACT (Activity) Event:** The date that the record was created.	2		1		3

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Pennsylvania Turnpike Commission

Office of Equal Opportunity Development

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
EO130	**Sexual Harassment Training** Records related to employee sexual harassment training. Includes training and presentation materials. See HT100 for Training and Development Programs. **Examples Include:** Training Materials Training Presentations **ACT (Activity) Event:** The date the program is superceded or is no longer available to employees	ACT+0		3		ACT+3
EO140	**Employee Investigations** Records that document the investigations resulting from employee discrimination, sexual harassment and other employment matters. See HE150 for Employee Situations - Non-union. **Examples Include:** Claims Investigation Files Suspension Records **ACT (Activity) Event:** The date that the record was created.	3		2		5

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Pennsylvania Turnpike Commission

Operations Center

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
OPS100	**Daily Incident Records** Records related to highway accidents. Includes daily incident reports, call box reports, and weather information. **Examples Include:** Call Box Reports Daily Incident Reports Trip Records Weather Information **ACT (Activity) Event:** The date that the record was created.	7		0		7
OPS110	**Audio Recordings** Tapes of telephone conversations between the dispatcher and state police detailing all daily occurrences. **Examples Include:** Tapes **ACT (Activity) Event:** Retain three years from the date that the record was created.	ACT+3		0		ACT+3
OPS120	**Operating Procedures** Records documenting various operating plans and procedures. Includes radio and computer operating procedures. See TR120 for Commission Policies and Procedures. **Examples Include:** Emergency Management Process Plan X Radio Operations Strike Plan **ACT (Activity) Event:** The date that the record was created.	IND		0		IND

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Pennsylvania Turnpike Commission

Operations Center

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
OPS130	**NCIC CAD Certifications** Records related to individual licenses to operate the National Crime Index Computer (NCIC) CAD system. **Examples Include:** Certifications **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
OPS140	**Transportation Agency Meetings** Records of the meetings and correspondence with external agencies, including I-95 Corridor Coalition and NTSB (National Transportation Safety Board). **Examples Include:** Correspondence Meeting Minutes **ACT (Activity) Event:** The date that the records are no longer useful.	ACT+1		2		ACT+3
OPS150	**Radio Operator Call Out Forms** Checksheets used for internal, operational purposes to track overtime completed by union radio operators. Maintained for operational and safety purposes. See PY140 for Time and Attendance. **Examples Include:** Call Out Forms **ACT (Activity) Event:** The date that the record was created.	3		0		3

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Pennsylvania Turnpike Commission

Operations Center

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
OPS160	**PSP White Sheets** Records that furnish information to Pennsylvania State Police and Pennsylvania Turnpike Commission personnel regarding incidents of special interest. **Examples Include:** White Sheets **ACT (Activity) Event:** The date that the record was created.	3		0		3
OPS170	**Operations Reporting** Records that summarize daily activities performed by the operations center. Includes daily reports and PEMA (Pennsylvania Emergency Management Agency) reports. **Examples Include:** Daily Reports PEMA Reports **ACT (Activity) Event:** The date that the record was created.	1		0		1

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Pennsylvania Turnpike Commission

Payroll

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
PY100	**Payroll Accounting** Administrative and accounting records related to the payment of salaries and wages, including deductions for benefits, taxes, etc. Includes salary, taxes, adjustments, benefits, contributions, and other adjustments to payroll checks. **Examples Include:** Payroll Deductions Payroll Registers Payroll Reports Wage Tax **ACT (Activity) Event:** Retain two years from the end of the calendar year in which the record was created.	ACT+2		2		ACT+4
PY110	**Federal and State Tax Withholding** Records supporting the wages and taxes paid, withheld and reported. Includes employee W-2 forms. **Examples Include:** W-2 Forms **ACT (Activity) Event:** Retain four years from the end of the calendar year in which the record was created.	ACT+4		0		ACT+4
PY120	**Labor Cost and Distribution** Records that are used to analyze and report the cost of labor for projects and non-projects. Includes reports that summarize labor costs. **Examples Include:** Labor Distribution Analysis Labor Distribution Reports **ACT (Activity) Event:** Retain four years from the end of the calendar year in which the record was created.	ACT+4		0		ACT+4

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Pennsylvania Turnpike Commission

Payroll

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
PY130	**Payroll Management Reports** Records that are related to the review and management of the payroll function. Includes reports that summarize payroll deductions and distributions. **Examples Include:** Account Distribution Death Benefits Reports Retirement Reports Savings Bond Reports SECA Reports Union Dues Reports **ACT (Activity) Event:** The end of the calendar year in which the record was created.	ACT+3		0		ACT+3
PY140	**Time and Attendance** Records related to the identification and reporting of hours worked. Includes all time cards and time sheets submitted to payroll in order to record hours worked for a particular period. **Examples Include:** Weekly Time Sheets **ACT (Activity) Event:** For federally funded projects, the date that the project is completed. For all other records, the end of the calendar year in which the record was created.	ACT+5		0		ACT+5
PY150	**Garnishment Accounting** Records that document garnishments and levies from employee wages as required by court order. Includes legal orders and payroll accounting. **Examples Include:** Garnishment Check Copies Legal Orders **ACT (Activity) Event:** Retain four years from the date that the record was created.	ACT+4		0		ACT+4

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Pennsylvania Turnpike Commission

Property Management

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
PM100	**Property Management** **Owned Property** Records related to the legal proof of property owned and operated by the PTC. Includes ownership records, tenant leases, property mortgage information, title insurance policy information, and correspondence. **Examples Include:** Correspondence Property Mortgage Information Purchase and Sales Agreement Tenant Leases Title Insurance Policy Information **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
PM110	**Property Inspections** Records related to the inspection of Commission-owned buildings. Includes inspection reports and supporting records. **Examples Include:** Inspection Reports Supporting Records **ACT (Activity) Event:** The date that the record was created.	3		0		3
TR190	**Contracts and Agreements** **Leased Property** Records documenting the terms and conditions of property leased by the PTC. Includes leases and lease-related correspondence. **Examples Include:** Landlord Correspondence Lease Agreements Lease Amendments **ACT (Activity) Event:** The date the lease terminates.	ACT+1		5		ACT+6

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Pennsylvania Turnpike Commission

Purchasing

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
AC170	**Capital Assets** Records used to document the purchasing activity of items that are capitalized, the purchase and sales of property and equipment and their depreciation, improvements, etc. Includes records related to the acquisition, transfer, retirement, disposal or loss of fixed assets that have been capitalized. Also included are reports that summarize this information. See schedule record series number 009 for Capital Assets - Federally Funded. **Examples Include:** Auction Records Capital Asset Reports Contract Estimates for Payments Depreciation Reports Fixed Asset Schedules Request for Disposal (Signed) Sale of Surplus Property Records **ACT (Activity) Event:** For federally funded projects, keep record in agency one year from the date the project is completed. For all other records, keep from the end of the fiscal year in which the record was created.	ACT+1		3		ACT+4
PU100	**Purchasing and Requisition** **Purchase Orders and Purchase Agreements** Records of actual purchasing contracts with vendors. Includes purchase orders, requisitions and bids/proposals for low dollar volume materials ($.01 - 2,999). **Examples Include:** Bids/Proposals ($.01 - 2,999) Change Orders General Services/Dept of Transportation Contracts Material Requests Purchase Orders Vendor Documentation **ACT (Activity) Event:** The date that the purchasing contract concludes.	ACT+4		3		ACT+7

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Pennsylvania Turnpike Commission

Purchasing

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
PU110	**Purchasing and Requisition Sealed Bids** **Sealed Bids** Records related to actual purchases or commitments to purchase and authorizations for expenses. Includes request for bids, bid review, and receiving of materials, etc. for high dollar volume purchases (over $3,000). **Examples Include:** Correspondence Sealed Bids (Over $3,000) **ACT (Activity) Event:** The date that the purchasing contract concludes.	ACT+4		3		ACT+7
PU120	**Cancelled Material Requests** Records related to the canceling of material ordered or purchased. **Examples Include:** Cancelled Material Requests **ACT (Activity) Event:** The date that the record was created.	1		0		1
PU130	**Bidder Mailing List Application** Records related to the application to bid on a particular service or product offering. **Examples Include:** Bidder Mailing List Applications **ACT (Activity) Event:** The date that the record was created.	0Y1M		0		0Y1M

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Pennsylvania Turnpike Commission

Purchasing

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
PU140	**Vendor Performance Evaluations** Records related to the assessment of vendors/suppliers which determine future contracting. **Examples Include:** Vendor Performance Evaluations **ACT (Activity) Event:** The date that the record was created.	3		0		3

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Pennsylvania Turnpike Commission

Risk Management

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
RM100	**Insurance Analysis and Reporting** Records used to analyze and summarize corporate insurance programs. **Examples Include:** Insurance Reports **ACT (Activity) Event:** The date that the record was created.	5		0		5
RM110	**Insurance Certificates** Records related to legal proof of insurance coverage. Includes certificates provided to the PTC by vendors and insurance certificates for the PTC. **Examples Include:** Insurance Certificates **ACT (Activity) Event:** The date that the insurance coverage terminates.	ACT+1		5		ACT+6
RM120	**Insurance Claims** **General Liability Claims** Records related to general liability claims filed against the PTC. See RM130 for Property Damage Claims and RM140 for Worker's Compensation Claims. **Examples Include:** General Liability Claims Incident Reports Statistical Reports **ACT (Activity) Event:** The date that the record was created.	3		3		6

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Pennsylvania Turnpike Commission

Risk Management

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
RM130	**Insurance Claims** **Property Damage Claims** Records related to claims filed for physical damage, loss of property, or loss of the property's income producing abilities. See RM120 for General Liability Claims and RM140 for Worker's Compensation Claims. **Examples Include:** Accident Review Board Documentation Disciplinary Board Documentation Police Reports Property Damage Claims Safety Advisor Reports **ACT (Activity) Event:** The date that the record was created.	3		3		6
RM140	**Insurance Claims** **Workers' Compensation Claims** Records related to worker's compensation claims filed for on-the-job accidents. See schedule record series number 166 for General Liability Claims and schedule record series number 167 for Property Damage Claims. **Examples Include:** Worker's Compensation Claims **ACT (Activity) Event:** Retain three years from the date the claim is closed.	ACT+3		7		ACT+10

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Pennsylvania Turnpike Commission

Risk Management

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
RM150	**Insurance Policies** Records describing and administering corporate insurance programs that provide coverage affecting Commission liability. Includes policies, amendments, riders, proofs of payment, etc. Includes policies for crime, D&O, DIC, EEOC, general liability, property insurance, worker's compensation, automobile, business travel, umbrella and excess, environmental, errors & omission, pollution liability, fiduciary, non-owned air travel, safe deposit legal liability and wrap-up insurance. Excludes employee medical and life insurance. **Examples Include:** Corporate Insurance Policies Wrap-Up Insurance Program Records **ACT (Activity) Event:** The date that the policy is superceded or is no longer in effect.	ACT+1		5		ACT+6
RM160	**Insurance Policies** **Surety Bonds** Records of bonds posted to indemnify against the failure to perform specified terms and conditions. **Examples Include:** **ACT (Activity) Event:** The date that the bond is superceded or is no longer in effect.	ACT+1		5		ACT+6
RM170	**Accident Review and Discipline Advisory Board Meetings** Records documenting issues and decision making of the Accident Review Board and Discipline Advisory Board meetings. Includes meeting minutes, agendas and other related information. **Examples Include:** Agendas Meeting Minutes **ACT (Activity) Event:** The date that the record was created.	3		0		3

Pennsylvania Turnpike Commission

Risk Management

Records Retention Schedule
With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
RM180	**PSP Accident/Assignment Reports** Records summarizing Pennsylvania State Police reportable and non-reportable accidents and injuries. These reports are utilized for property damage and general liability claims, employee accidents, customer injuries and statistical reporting. **Examples Include:** PSP Accident/Assignment Reports Statistical Reports **ACT (Activity) Event:** The date that the record was created.	3		0		3

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Pennsylvania Turnpike Commission

Secretary Treasurer's Office

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
TR100	**Business Organization** Records documenting the creation, structure, and governance of the Commission. Includes by-laws, charters and related records. **Examples Include:** By-Laws Commission Charters **ACT (Activity) Event:** The date that the record was created.	IND		0		IND
TR110	**Commission Meetings** Records documenting proceedings of board, committee of board, shareholder, and other legally required meetings. Includes meeting minutes, meeting notices, voting records, proxies, etc. See DEP110 for departmental meeting minutes. **Examples Include:** Agendas and Meeting Notices Commission Approvals Commissioner Meeting Minutes and Decisions Meeting Notes **ACT (Activity) Event:** The date that the record was created.	6		IND		IND
TR120	**Commission Policies and Procedures** Records documenting Commission-wide directives and mandated polices and procedures. **Examples Include:** Ethics Books Policy Letters/Booklets **ACT (Activity) Event:** The date the policy or procedure is superceded.	ACT+0		10		ACT+10

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Pennsylvania Turnpike Commission

Secretary Treasurer's Office

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
TR130	**Company Archives** Records documenting the Commission's past, its development, significant events, and key players. **Examples Include:** Appointments of Council Commissioner Files Historical Financial Records Original Plans and Drawings Trust Indentures **ACT (Activity) Event:** The date that the record was created.	IND	+	0	=	IND
TR140	**Debt Issuance** Records related to the issuance of revenue bonds that back construction by the Commission. **Examples Include:** Arbitrage Reports Bond Documents State and Local Government Investments Swap Payment Documentation **ACT (Activity) Event:** Retain three years or as long as bonds are outstanding, whichever is longer.	ACT+3	+	0	=	ACT+3
TR150	**Contracts and Agreements** Records related to obligations under contracts, leases, and other agreements between the Commission and outside parties. Includes contracts for services, purchases and sales, transportation, leases, property and construction, and exchange of property. **Examples Include:** Amendments Contracts Negotiations **ACT (Activity) Event:** The date that the final payment letter is received.	ACT+0	+	6	=	ACT+6

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Pennsylvania Turnpike Commission

Secretary Treasurer's Office

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
TR160	**Contracts and Agreements** **Warranties** Records related to warranties on various equipment at PTC facilities. **Examples Include:** Insurance Bonds Warranties **ACT (Activity) Event:** The date the warranty terminates.	ACT+1		5		ACT+6
TR170	**Contracts and Agreements** **Service Plaza Agreements (Concession Management)** Records related to agreements between the PTC and various concessions who lease space from service areas on the Turnpike. Includes lease agreements, amendments and related correspondence. **Examples Include:** Correspondence Lease Agreements Lease Amendments **ACT (Activity) Event:** The date the contract terminates.	ACT+1		5		ACT+6
TR180	**Contracts and Agreements** **Equipment and Application Support Agreements** Records supporting internal and external agreements to support the hardware and software used by the Commission. **Examples Include:** Hardware Lease Agreements Hardware Maintenance Agreements Software Agreements **ACT (Activity) Event:** The date the contract terminates.	ACT+1		5		ACT+6

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Pennsylvania Turnpike Commission

Secretary Treasurer's Office

Records Retention Schedule With Retention Periods

RecordClass Code	Record Class Name / Record Class Description	Retention Periods OnSite	+	OffSite	=	Total
TR190	**Contracts and Agreements** **Leased Property** Records documenting the terms and conditions of property leased by the PTC. Includes leases and lease-related correspondence. **Examples Include:** Landlord Correspondence Lease Agreements Lease Amendments **ACT (Activity) Event:** The date the lease terminates.	ACT+1		5		ACT+6
TR200	**Strategic and Business Planning** Records that document the strategic and business plans of the PTC. **Examples Include:** Strategic Plans **ACT (Activity) Event:** The date that the record was created.	MAX3		0		MAX3

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Attachment 9
Existing PTC Host Reports

CRAS0110Deposits

AMM Deposits By Lane

Road Information

Interchange: 01 105 M19

Reporting Period
05/01/2014

01 105 M19

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 15:48:33	05/12/2014 11:35:31	$1,931.51	Manual
Lash, Steven	2	05/01/2014 16:37:38	05/12/2014 11:35:37	2,415.55	Manual
Lash, Steven	9	05/01/2014 08:04:42	05/12/2014 11:35:42	1,843.59	Manual
Lash, Steven	10	05/01/2014 07:27:30	05/12/2014 11:35:55	1,594.14	Manual
				$7,784.79	

AMM Deposits By Lane

Road Information
Interchange: 01 106 M22

Reporting Period
05/01/2014

01 106 M22

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 15:24:07	05/12/2014 11:36:01	$176.38	Manual
Lash, Steven	2	05/01/2014 15:40:58	05/12/2014 11:36:07	58.47	Manual
Lash, Steven	4	05/01/2014 09:38:19	05/12/2014 11:36:12	167.68	Manual
Lash, Steven	5	05/01/2014 10:07:02	05/12/2014 11:36:18	50.30	Manual
				$452.83	

AMM Deposits By Lane

Road Information
Interchange: 01 110 M04

Reporting Period
05/01/2014

01 110 M04

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 12:48:16	05/12/2014 11:35:16	$546.85	Manual
Lash, Steven	3	05/01/2014 13:42:28	05/12/2014 11:35:24	438.57	Manual
				$985.42	

AMM Deposits By Lane

Road Information
Interchange: 01 112 CAL

Reporting Period
05/01/2014

01 112 CAL

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 18:36:43	05/12/2014 11:34:23	$1,316.95	Manual
Lash, Steven	2	05/01/2014 19:04:26	05/12/2014 11:34:29	1,290.25	Manual
Lash, Steven	5	05/01/2014 19:22:23	05/12/2014 11:34:35	919.29	Manual
Lash, Steven	6	05/01/2014 18:40:47	05/12/2014 11:35:05	1,554.79	Manual
				$5,081.28	

AMM Deposits By Lane

Road Information
Interchange: 01 115 M48

Reporting Period
05/01/2014

01 115 M48

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 10:49:03	05/12/2014 11:36:25	$1,392.31	Manual
Lash, Steven	3	05/01/2014 15:49:47	05/12/2014 11:36:32	1,408.80	Manual
				$2,801.11	

AMM Deposits By Lane

Road Information
Interchange: 01 116 M52

Reporting Period
05/01/2014

01 116 M52

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 21:25:56	05/12/2014 11:36:38	$918.00	Manual
Lash, Steven	2	05/01/2014 21:46:09	05/12/2014 11:36:45	1,066.17	Manual
Lash, Steven	9	05/01/2014 19:23:23	05/12/2014 11:37:10	928.52	Manual
Lash, Steven	10	05/01/2014 18:53:37	05/12/2014 11:37:23	966.82	Manual
				$3,879.51	

AMM Deposits By Lane

Road Information
Interchange: 02 120 E30

Reporting Period
05/01/2014

02 120 E30

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2	05/01/2014 19:55:28	05/07/2014 14:51:57	$753.55	Manual
Lash, Steven	5	05/01/2014 19:48:16	05/07/2014 14:52:07	816.42	Manual
				$1,569.97	

AMM Deposits By Lane

Road Information
Interchange: 02 122 MOR

Reporting Period
05/01/2014

02 122 MOR

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 08:41:08	05/07/2014 09:54:24	$384.33	Manual
Lash, Steven	3	05/01/2014 08:06:17	05/07/2014 09:54:31	673.89	Manual
				$1,058.22	

AMM Deposits By Lane

Road Information
Interchange: 02 123 W18

Reporting Period
05/01/2014

02 123 W18

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2	05/01/2014 20:12:27	05/09/2014 09:44:23	$777.07	Manual
Lash, Steven	5	05/01/2014 20:30:51	05/09/2014 09:44:28	725.42	Manual
				$1,502.49	

AMM Deposits By Lane

Road Information
Interchange: 03 131 M66

Reporting Period
05/01/2014

03 131 M66

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2	05/01/2014 18:54:46	05/07/2014 14:51:23	$1,130.49	Manual
Lash, Steven	3	05/01/2014 19:30:27	05/07/2014 14:51:31	1,040.73	Manual
Lash, Steven	6	05/01/2014 20:05:15	05/07/2014 14:51:42	1,147.86	Manual
Lash, Steven	7	05/01/2014 20:37:44	05/07/2014 14:51:49	1,358.45	Manual
				$4,677.53	

AMM Deposits By Lane

Road Information
Interchange: 03 132 R30

Reporting Period
05/01/2014

03 132 R30

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 10:49:33	05/07/2014 09:54:41	$935.00	Manual
Lash, Steven	3	05/01/2014 07:59:24	05/07/2014 09:54:49	826.49	Manual
				$1,761.49	

AMM Deposits By Lane

Road Information
Interchange: 03 133 130

Reporting Period
05/01/2014

03 133 130

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 09:49:51	05/07/2014 09:54:58	$547.00	Manual
Lash, Steven	2	05/01/2014 09:25:49	05/07/2014 09:55:04	63.18	Manual
Lash, Steven	3	05/01/2014 08:37:27	05/07/2014 09:55:13	657.32	Manual
				$1,267.50	

AMM Deposits By Lane

Road Information
Interchange: 04 101 KEA

Reporting Period
05/01/2014

04 101 KEA

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 18:05:06	05/08/2014 08:42:05	$663.26	Manual
Lash, Steven	2	05/01/2014 17:44:28	05/08/2014 08:42:10	780.12	Manual
Lash, Steven	5	05/01/2014 13:14:21	05/08/2014 08:42:16	649.83	Manual
Lash, Steven	6	05/01/2014 13:52:41	05/08/2014 08:42:23	598.94	Manual
				$2,692.15	

AMM Deposits By Lane

Road Information
Interchange: 04 102 CLS

Reporting Period
05/01/2014

04 102 CLS

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 15:16:22	05/08/2014 08:42:30	$805.02	Manual
Lash, Steven	2	05/01/2014 15:06:53	05/08/2014 08:42:37	745.39	Manual
Lash, Steven	5	05/01/2014 11:21:26	05/08/2014 08:42:43	551.29	Manual
Lash, Steven	6	05/01/2014 12:35:19	05/08/2014 08:42:48	646.06	Manual
				$2,747.76	

AMM Deposits By Lane

Road Information
Interchange: 08 142 S06

Reporting Period
05/01/2014

08 142 S06

User Name	Lane Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	1	05/01/2014 09:08:37	05/07/2014 14:52:13	$657.76	Manual
Lash, Steven	2	05/01/2014 08:43:15	05/07/2014 14:52:19	505.13	Manual
Lash, Steven	4	05/01/2014 10:12:14	05/07/2014 14:52:25	696.86	Manual
Lash, Steven	5	05/01/2014 10:28:02	05/07/2014 14:52:33	712.40	Manual
				$2,572.15	

~ End of Report ~

CRAS0102AMMTODSum

AMM Tour of Duty Summary Report

Road Information

Highway: **Toll 43 (MF)**
Interchange: **01 105 M19**
Lane: **1**

Tour of Duty

Start: **05/05/2014 15:15:42**
End: **05/08/2014 15:46:05**

Cash Fare Paid	$2,123.73	Total Cash Fare Paid	$2,123.73	Total Cash Fare Paid	$2,123.73	Lane Total	$2,124.56
(+/-) Other Adjustments	$0.00	(+) Charge Fare Paid	$0.00	(-) Cash Fare Due	$2,124.60	(-) Cash Fare Due	$2,124.60
Total Cash Fare Paid:	**$2,123.73**	**Total Fare Paid:**	**$2,123.73**	**Cash Variance:**	**-$0.87**	**Fare Lane Variance:**	**-$0.04**
		Insufficient Funds	**$8.20**				

Total Cash Fare Paid	$2,123.73	Deposit	$2,132.59	Deposit	$2,132.59	Deposit	$2,132.59
(-) Lane Total	$2,124.56	(-) Total Cash Fare Paid	$2,123.73	(-) Cash Fare Due	$2,124.60	(-) Lane Total	$2,124.56
Lane Variance:	**-$0.83**	**Deposit Variance:**	**$8.86**	**Fare Deposit Variance:**	**$7.99**	**Lane Deposit Variance:**	**$8.03**

UO Codes

Barcode scanner	0	Non-Proc trans	0	Back out	12	Reverse run through	0	HW Error Reading Card	1	Violation	0	IF Counts	4

Lane | **Segment** | **Vehicle Counts By Class** | **Transaction Count**

Type	Mode	Start	End	Auto Seg	Class 1	Class 2 - 8	Class 9	UO Count	Cash	Charge	Non-Rev	ETC	Total	Cash Fare Paid
AB	AMMEZP	05/05/2014 15:15:42	05/05/2014 16:38:27	No	47	2	0	0	48	0	0	1	49	$110.56
AB	AMMEZP	05/05/2014 17:13:10	05/08/2014 15:39:57	No	819	56	0	17	873	0	4	11	888	2,013.17
				Total:	**866**	**58**	**0**	**17**	**921**	**0**	**4**	**12**	**937**	**$2,123.73**

~ End of Report ~

CRTH0210AMMTourSumAndVar

AMM Tour Summary And Variance (By Date Range)

Road Information

Highway: **Toll 43 (MF)**
Interchange: **01 103 M15**
Lane: **1**

Reporting Period

05/01/2014
05/10/2014

Lane: 1

Tour of Duty

Start	End	Interchange	Audit Status	Cash Fare Paid	Total Cash Adj	Deposit	Other Adj	Variance	Charge Fare Paid	Insuf Funds
04/26/2014 12:13:52	05/04/2014 15:41:48	01 103 M15	Closed	$38.00	$0.00	$39.24	$0.00	$1.24	$0.00	$0.00
05/04/2014 15:41:48	05/05/2014 09:53:26	01 103 M15	Closed	2.30	0.00	2.40	0.00	0.10	0.00	0.00
			AMM Total	**$40.30**	**$0.00**	**$41.64**	**$0.00**	**$1.34**	**$0.00**	**$0.00**

AMM Tour Summary And Variance (By Date Range)

Road Information

Highway: **Toll 43 (MF)**
Interchange: **01 103 M15**
Lane: **1**

Reporting Period
05/01/2014
05/10/2014

SUMMARY

Interchange	Lane	Cash Fare Paid	Total Cash Adj	Deposit	Other Adj	Variance	Charge Fare Paid	Insuf Funds
01 103 M15	1	40.30	0.00	41.64	0.00	1.34	0.00	0.00

~ End of Report ~

CRAS0004AutoSegTxn

Auto Segment Transaction

Road Information
Highway: **Gateway Barrier**
Interchange: **(All)**

Data Source
Ticket Transactions

Reporting Period
05/01/2014

07 135 GTY

		Tour Of Duty		Segment				
Collector Number	**Collector Name**	**Start**	**End**	**Start**	**End**	**Lane Number**	**Transaction Number**	**Transaction Date**
2371	DALLAS E ANTHONY	05/01/2014 06:40:33	05/01/2014 14:42:35	05/01/2014 10:50:00	05/01/2014 10:50:00	99	1	05/01/2014 10:50:00

Auto Segment Transaction

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 476**	**Ticket Transactions**	**05/01/2014**
Interchange:	**(All)**		

06 035 POC

		Tour Of Duty		Segment				
Collector Number	**Collector Name**	**Start**	**End**	**Start**	**End**	**Lane Number**	**Transaction Number**	**Transaction Date**
2232	ROBERT E RYZNER	05/01/2014 11:05:58	05/01/2014 18:37:59	05/01/2014 11:50:59	05/01/2014 11:50:59	99	4357	05/01/2014 11:50:59

Auto Segment Transaction

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276**	**Ticket Transactions**	**05/01/2014**
Interchange:	**(All)**		

05 006 PIT

		Tour Of Duty		Segment				
Collector Number	**Collector Name**	**Start**	**End**	**Start**	**End**	**Lane Number**	**Transaction Number**	**Transaction Date**
2727	ROBERT C DEMKO	05/01/2014 05:49:56	05/01/2014 13:36:45	05/01/2014 11:50:59	05/01/2014 11:50:59	99	4354	05/01/2014 11:50:59
3164	ROBERT J OLSZEWSKI	05/01/2014 14:44:08	05/01/2014 22:27:42	05/01/2014 17:50:59	05/01/2014 17:50:59	99	4355	05/01/2014 17:50:59

Auto Segment Transaction

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276**	**Ticket Transactions**	**05/01/2014**
Interchange:	**(All)**		

05 012 BRZ

		Tour Of Duty		Segment				
Collector Number	**Collector Name**	**Start**	**End**	**Start**	**End**	**Lane Number**	**Transaction Number**	**Transaction Date**
2413	KEVIN D SPADE	04/30/2014 23:00:50	05/01/2014 07:43:40	05/01/2014 01:50:59	05/01/2014 01:50:59	99	4356	05/01/2014 01:50:59

Auto Segment Transaction

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276**	**Ticket Transactions**	**05/01/2014**
Interchange:	**(All)**		

05 030 DRB

		Tour Of Duty		Segment				
Collector Number	**Collector Name**	**Start**	**End**	**Start**	**End**	**Lane Number**	**Transaction Number**	**Transaction Date**
2932	THOMAS NICOLUCCI	05/01/2014 14:38:37	05/01/2014 21:01:46	05/01/2014 17:50:59	05/01/2014 17:50:59	99	610	05/01/2014 17:50:59

~ End of Report ~

CRTH2600AvgLnThrghpt

Average Lane Throughput (Date Range)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: (All)

Data Availability
ETC: N/A
Audit Status: Audited

Reporting Period
From: 05/01/2014
To: 05/10/2014

Hour

District 1

Interchange	Lane	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
6 Pittsburgh	1	13	7	6	6	7	27	53	92	110	110	119	122	137	149	170	184	180	163	109	75	60	55	45	36	2,035
	3	42	27	23	22	35	87	166	206	230	232	254	254	273	260	290	320	307	300	235	192	148	129	115	92	4,238
	4	1	1	0	1	1	2	6	8	8	12	11	14	13	21	19	19	14	12	10	5	6	4	3	4	193
	5	0	0	0	0	0	0	6	41	47	53	43	58	74	72	75	107	113	114	96	54	40	30	10	0	1,033
	8	37	16	22	10	19	77	88	103	109	119	133	140	140	144	135	145	153	157	142	118	93	83	76	66	2,324
	9	22	21	7	15	17	33	51	59	62	75	84	98	100	109	114	128	132	132	118	77	58	54	52	51	1,669
	10	1	0	0	0	0	6	29	50	57	63	73	79	85	89	104	113	123	112	103	67	53	40	19	3	1,267
	99	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
6 Pittsburgh Total:		116	72	58	54	79	232	399	559	623	664	717	766	822	844	907	1,016	1,022	990	813	588	458	395	320	252	12,761

Interchange	Lane	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
7 Irwin	1	0	0	1	1	1	2	44	66	65	54	63	67	68	70	75	82	87	86	65	46	36	28	3	1	1,010
	2	1	1	0	0	1	2	4	4	5	12	10	6	6	6	6	7	6	8	4	3	4	4	1	1	100
	3	20	13	10	14	25	92	95	107	93	100	102	115	106	106	116	119	129	124	99	70	63	52	58	37	1,865
	4	40	25	16	12	17	32	25	34	34	46	43	26	73	48	65	86	70	73	25	64	35	31	50	79	1,048
	5	0	0	0	0	0	0	30	41	53	61	63	56	63	58	75	91	78	81	75	52	52	37	34	0	999
	8	0	0	0	0	0	0	4	24	35	23	38	76	42	88	56	71	92	86	91	32	22	35	9	0	822
	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 Irwin Total:		61	39	27	27	44	128	202	276	285	296	319	346	358	376	393	456	462	458	359	267	212	187	155	118	5,844

Average Lane Throughput (Date Range)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: (All)

Data Availability
ETC: N/A
Audit Status: Audited

Reporting Period
From: 05/01/2014
To: 05/10/2014

Hour

District 1

Interchange	Lane	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
8 New Stanton	1	5	4	4	7	14	36	52	50	56	57	59	70	56	65	70	72	74	76	51	34	26	24	17	10	990
	2	16	11	10	13	20	41	60	66	72	87	91	107	103	102	101	110	107	102	77	58	53	48	32	21	1,507
	3	2	1	2	2	2	2	5	6	8	7	9	9	10	10	11	12	12	9	6	5	6	4	3	3	147
	4	26	22	18	17	21	31	45	57	80	88	81	81	106	108	111	104	101	96	87	70	56	50	44	31	1,530
	6	0	0	0	0	0	0	0	0	0	3	13	19	4	0	0	0	0	0	0	0	0	0	0	0	39
	7	25	27	10	16	10	33	55	67	73	81	84	82	96	111	118	136	137	138	118	103	76	64	60	62	1,780
	8	36	15	19	11	20	18	38	47	49	53	57	65	77	83	103	110	109	108	85	75	63	52	46	42	1,381
	9	0	0	0	0	0	0	0	0	2	11	4	0	11	5	0	0	0	0	0	0	0	0	0	0	32
	11	0	0	0	0	0	0	2	16	26	30	39	48	45	54	65	70	71	72	51	36	25	23	11	0	683
	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 New Stanton Total:		110	80	63	66	87	161	257	309	366	417	437	481	508	538	579	614	611	601	475	381	305	265	213	169	8,089
Grand Total:		287	191	148	147	210	521	858	1,144	1,274	1,377	1,473	1,593	1,688	1,758	1,879	2,086	2,095	2,049	1,647	1,236	975	847	688	539	26,694

~ End of Report ~

CRTH4220BB_M

Bedford/Breezewood (Monthly)

Road Information
Highway: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
March, 2013 vs.
March, 2012

			March, 2013						March, 2012						Difference	
			ETC		Non-ETC		Combined		ETC		Non-ETC		Combined		Traffic	Revenue
Exit - Cost Center	**Entry - Cost Center**	**Vehicle Class**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**
Bedford - 223	**Breezewood - 224**															
		1	8,982	$15,179.16	13,877	$28,447.85	22,859	$43,627.01	8,460	$14,042.78	16,512	$33,849.60	24,972	$47,892.38	(2,113)	($4,265.37)
		2	424	864.96	525	1,286.25	949	2,151.21	385	770.00	630	1,543.50	1,015	2,313.50	(66)	(162.29)
		3	98	265.58	51	163.20	149	428.78	80	212.80	63	201.60	143	414.40	6	14.38
		4	519	1,577.76	184	662.40	703	2,240.16	647	1,928.06	203	730.80	850	2,658.86	(147)	(418.70)
		5	1,814	7,981.60	325	1,690.00	2,139	9,671.60	1,921	8,279.51	386	2,007.20	2,307	10,286.71	(168)	(615.11)
		6	1,157	6,259.37	258	1,625.40	1,415	7,884.77	1,153	6,110.90	308	1,940.40	1,461	8,051.30	(46)	(166.53)
		7	2,089	16,252.42	403	3,647.15	2,492	19,899.57	2,115	16,137.45	499	4,515.95	2,614	20,653.40	(122)	(753.83)
		8	11	107.80	2	22.80	13	130.60	5	48.05	3	34.20	8	82.25	5	48.35
		Subtotal:	**15,094**	**$48,488.65**	**15,625**	**$37,545.05**	**30,719**	**$86,033.70**	**14,766**	**$47,529.55**	**18,604**	**$44,823.25**	**33,370**	**$92,352.80**	**(2,651)**	**($6,319.10)**
Breezewood - 224	**Bedford - 223**															
		1	9,053	15,299.57	14,360	29,438.00	23,413	44,737.57	8,200	13,610.36	17,107	35,069.35	25,307	48,679.71	(1,894)	(3,942.14)
		2	512	1,044.48	508	1,244.60	1,020	2,289.08	621	1,242.00	651	1,594.95	1,272	2,836.95	(252)	(547.87)
		3	105	284.55	34	108.80	139	393.35	96	255.36	69	220.80	165	476.16	(26)	(82.81)
		4	473	1,437.92	123	442.80	596	1,880.72	666	1,984.68	179	644.40	845	2,629.08	(249)	(748.36)
		5	1,895	8,338.00	375	1,950.00	2,270	10,288.00	1,915	8,253.65	437	2,272.40	2,352	10,526.05	(82)	(238.05)
		6	769	4,160.29	190	1,197.00	959	5,357.29	808	4,282.40	242	1,524.60	1,050	5,807.00	(91)	(449.71)
		7	1,917	14,914.26	380	3,439.00	2,297	18,353.26	2,125	16,213.75	394	3,565.70	2,519	19,779.45	(222)	(1,426.19)
		8	38	372.40	5	57.00	43	429.40	25	240.25	2	22.80	27	263.05	16	166.35
		9	1	51.41	0	0.00	1	51.41	0	0.00	0	0.00	0	0.00	1	51.41
		Subtotal:	**14,763**	**$45,902.88**	**15,975**	**$37,877.20**	**30,738**	**$83,780.08**	**14,456**	**$46,082.45**	**19,081**	**$44,915.00**	**33,537**	**$90,997.45**	**(2,799)**	**($7,217.37)**

Bedford/Breezewood (Monthly)

Road Information
Highway: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
March, 2013 vs.
March, 2012

SUMMARY		March, 2013						March, 2012						Difference	
		ETC		Non-ETC		Combined		ETC		Non-ETC		Combined		Traffic	Revenue
SUMMARY	Vehicle Class	Traffic	Revenue	Traffic	Revenue	Traffic	Revenue	Traffic	Revenue	Traffic	Revenue	Traffic	Revenue	Traffic	Revenue
	1	18,035	$30,478.73	28,237	$57,885.85	46,272	$88,364.58	16,660	$27,653.14	33,619	$68,918.95	50,279	$96,572.09	(4,007)	($8,207.51)
	2	936	1,909.44	1,033	2,530.85	1,969	4,440.29	1,006	2,012.00	1,281	3,138.45	2,287	5,150.45	(318)	(710.16)
	3	203	550.13	85	272.00	288	822.13	176	468.16	132	422.40	308	890.56	(20)	(68.43)
	4	992	3,015.68	307	1,105.20	1,299	4,120.88	1,313	3,912.74	382	1,375.20	1,695	5,287.94	(396)	(1,167.06)
	5	3,709	16,319.60	700	3,640.00	4,409	19,959.60	3,836	16,533.16	823	4,279.60	4,659	20,812.76	(250)	(853.16)
	6	1,926	10,419.66	448	2,822.40	2,374	13,242.06	1,961	10,393.30	550	3,465.00	2,511	13,858.30	(137)	(616.24)
	7	4,006	31,166.68	783	7,086.15	4,789	38,252.83	4,240	32,351.20	893	8,081.65	5,133	40,432.85	(344)	(2,180.02)
	8	49	480.20	7	79.80	56	560.00	30	288.30	5	57.00	35	345.30	21	214.70
	9	1	51.41	0	0.00	1	51.41	0	0.00	0	0.00	0	0.00	1	51.41
	Grand Total:	**29,857**	**$94,391.53**	**31,600**	**$75,422.25**	**61,457**	**$169,813.78**	**29,222**	**$93,612.00**	**37,685**	**$89,738.25**	**66,907**	**$183,350.25**	**(5,450)**	**($13,536.47)**

Note: This revenue was not actually collected from motorists.

~ End of Report ~

CRAS0122COPAcct

Certificate of Passage - Accounting

Road Information

Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Collector: **(All)**
Last Name: **(All)**
License #: **(All)**

Reporting Period

From: **05/01/2014**
To: **05/01/2014**

COP Number	Name & Address	COP Date	Original Balance Due	License #	Collector Number	Exit Interchange	Exit MP	Exit Trans Number	COP Process Date
C07047WV14	TIMOTHY ROBERT KRAMER 507 JEFFERSON AVE, JEANNETTE, PA 15644 US	05/01/2014 19:57:30	$5.55	31548201	2001	05 007 IRW	67	2188	05/02/2014 03:24:08
C07087VV64	TRENT EMERSON CUNNINGHAM 5703 KING OF ARMS DR, GIBSONIA, PA 15044 US	05/01/2014 06:58:37	$3.60	28885328	2200	05 007 IRW	67	610	05/02/2014 03:24:08
C07087VXT4	JAMES DILLION ASHER 8 ALLEGHENY CTR APT 816, PITTSBURGH, PA 15212 US	05/01/2014 08:11:09	$3.60	31643485	2200	05 007 IRW	67	660	05/02/2014 03:24:08
C07087VY54	AMANDA D WILBURN 6724 NEWBRIDGE DR, CINCINNATI, OH 45239 US	05/01/2014 08:21:48	$11.25	1818560792	2200	05 007 IRW	67	672	05/02/2014 03:24:08
C07087WHM4	MEGAN ANNE HAYES 138 E OTTERMAN ST REAR, GREENSBURG, PA 15601 US	05/01/2014 15:34:22	$3.60	29273215	2106	05 007 IRW	67	1173	05/02/2014 03:24:08
Total:			$27.60						

~ End of Report ~

CRAS0122COPFC

Certificate of Passage - Fare Collection

Road Information

Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Collector: (All)
Last Name: (All)
Balance Due: (All)
COP Type: (All)

Reporting Period

From: 05/01/2014
To: 05/01/2014

COP Number	Record Type	Name	State	Country	COP Date	Original Balance Due	Collector Number	Entry Interchange	Exit Interchange	Exit Trans Number	Collector Class
C07047WV14	Certificate of Passage	TIMOTHY ROBERT KRAMER	PA	US	05/01/2014 19:57:30	$5.55	2001	05 004 BVL	05 007 IRW	2188	1
C07087WHM4	Certificate of Passage	MEGAN ANNE HAYES	PA	US	05/01/2014 15:34:22	$3.60	2106	05 006 PIT	05 007 IRW	1173	1
C07087VV64	Certificate of Passage	TRENT EMERSON CUNNINGHAM	PA	US	05/01/2014 06:58:37	$3.60	2200	05 006 PIT	05 007 IRW	610	1
C07087VXT4	Certificate of Passage	JAMES DILLION ASHER	PA	US	05/01/2014 08:11:09	$3.60	2200	05 006 PIT	05 007 IRW	660	1
C07087VY54	Certificate of Passage	AMANDA D WILBURN	OH	US	05/01/2014 08:21:48	$11.25	2200	05 011 BED	05 007 IRW	672	1
C07047VTK4	Commercial Vehicle Insufficient Funds	WILLIAM H MOORE	TX	US	05/01/2014 06:40:44	$82.70	2503		05 007 IRW	1061	4
Total:						$110.30					

~ End of Report ~

CRTH3100Cls_Fam

Class (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/10/2014

Highway Name: **Toll 76-276, Toll 476**

	TRAFFIC			REVENUE		
Class	**ETC**	**Non-ETC**	**Combined**	**ETC**	**Non-ETC**	**Combined**
1	244,308	117,210	361,518	$775,051.02	$630,790.26	$1,405,841.28
2	6,747	3,143	9,890	33,531.61	29,363.15	62,894.76
3	1,259	422	1,681	8,049.33	4,568.85	12,618.18
4	2,810	447	3,257	23,897.26	5,305.40	29,202.66
5	5,604	484	6,088	93,283.39	12,453.00	105,736.39
6	3,705	315	4,020	108,515.12	12,690.55	121,205.67
7	4,650	562	5,212	199,699.47	32,569.05	232,268.52
8	259	7	266	8,257.86	180.90	8,438.76
9	13	2	15	1,295.50	420.55	1,716.05
Total :	**269,355**	**122,592**	**391,947**	**$1,251,580.56**	**$728,341.71**	**$1,979,922.27**

~ End of Report ~

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	327	CASH	05/10/2014 11:01:13	1	2	312	1	05/10/2014	4757	1	2	1	2	$23.70	$0.00			
Original	3	Ticket	328	CASH	05/10/2014 11:01:47	1	2	75	4	05/10/2014	1846	1	2	1	2	2.05	0.00			
Original	3	Ticket	329	CASH	05/10/2014 11:02:37	1	2	146	2	05/10/2014	6939	1	2	1	2	6.45	0.00			72
Original	3	Ticket	330	CASH	05/10/2014 11:03:01	1	2	48	1	05/10/2014	8446	1	2	1	2	4.95	0.00			
Original	3	Ticket	331	CASH	05/10/2014 11:03:58	3	2	146	1	05/10/2014	6493	3	2	2	2	11.65	0.00			24 72
Original	3	Ticket	332	CASH	05/10/2014 11:05:07	1	2	67	1	05/10/2014	3768	1	2	1	2	3.05	0.00			
Original	3	Ticket	333	CASH	05/10/2014 11:05:30	1	2	57	1	05/10/2014	530	1	2	1	2	4.50	0.00			
Original	3	Ticket	334	CASH	05/10/2014 11:05:49	1	2	48	4	05/10/2014	5604	1	2	1	2	4.95	0.00			
Original	3	Ticket	335	CASH	05/10/2014 11:06:12	1	2	75	4	05/10/2014	1860	1	2	1	2	2.05	0.00			
Original	3	Ticket	336	ETC	05/10/2014 11:06:39			161	3	05/10/2014	0	0	0	1	2	0.00	0.00			72 81 82
Original	3	Ticket	337	CASH	05/10/2014 11:07:05	1	2	110	1	05/10/2014	5017	1	2	1	2	2.60	0.00			
Original	3	Ticket	338	CASH	05/10/2014 11:07:46	1	2	57	3	05/10/2014	5802	1	2	1	2	4.50	0.00			
Original	3	Ticket	339	CASH	05/10/2014 11:08:02	1	2	67	1	05/10/2014	3777	1	2	1	2	3.05	0.00			72
Original	3	Ticket	418	CASH	05/10/2014 11:59:31	1	2	67	3	05/10/2014	636	1	2	1	2	3.05	0.00			
Original	3	Ticket	419	CASH	05/10/2014 12:00:31	1	2	247	2	05/10/2014	2307	1	2	1	2	17.45	0.00			
Original	3	Ticket	420	CASH	05/10/2014 12:01:01	1	2	67	1	05/10/2014	3867	1	2	1	2	3.05	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	421	CASH	05/10/2014 12:01:18	1	2	161	3	05/10/2014	3847	1	2	1	2	$8.80	$0.00			
Original	3	Ticket	422	CASH	05/10/2014 12:03:19	1	2	48	4	05/10/2014	5762	1	2	1	2	4.95	0.00			
Original	3	Ticket	423	CASH	05/10/2014 12:03:48	1	2	161	4	05/10/2014	5168	1	2	1	2	8.80	0.00			
Original	3	Ticket	424	CASH	05/10/2014 12:04:16	1	2	226	4	05/10/2014	3173	1	2	1	2	15.40	0.00			
Original	3	Ticket	425	CASH	05/10/2014 12:04:42	1	2	57	3	05/10/2014	6144	1	2	1	2	4.50	0.00			
Original	3	Ticket	426	CASH	05/10/2014 12:05:06	1	2	67	1	05/10/2014	3871	1	2	1	2	3.05	0.00			
Original	3	Ticket	427	CASH	05/10/2014 12:05:39	1	2	67	1	05/10/2014	3876	1	2	1	2	3.05	0.00			
Original	3	Ticket	428	CASH	05/10/2014 12:06:02	1	2	57	3	05/10/2014	6128	1	2	1	2	4.50	0.00			
Original	3	Ticket	429	CASH	05/10/2014 12:07:02	1	2	226	2	05/10/2014	8884	1	2	1	2	15.40	0.00			
Original	3	Ticket	430	CASH	05/10/2014 12:07:38	1	2	67	1	05/10/2014	3886	1	2	1	2	3.05	0.00			
Original	3	Ticket	431	CASH	05/10/2014 12:08:07	1	2	75	2	05/10/2014	5112	1	2	1	2	2.05	0.00			
Original	3	Ticket	432	CASH	05/10/2014 12:08:36	1	2	48	1	05/10/2014	8567	1	2	1	2	4.95	0.00			
Original	3	Ticket	433	CASH	05/10/2014 12:08:58	1	2	161	3	05/10/2014	3895	1	2	1	2	8.80	0.00			
Original	3	Ticket	434	CASH	05/10/2014 12:09:38	2	2	75	4	05/10/2014	1998	2	3	1	2	3.05	0.00			24
Original	3	Ticket	435	CASH	05/10/2014 12:10:07	1	2	75	2	05/10/2014	5120	1	2	1	2	2.05	0.00			
Original	3	Ticket	436	CASH	05/10/2014 12:10:30	1	2	312	3	05/10/2014	8319	1	2	1	2	23.70	0.00			
Original	3	Ticket	437	CASH	05/10/2014 12:11:15	1	2	161	3	05/10/2014	3923	1	2	1	2	8.80	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	438	CASH	05/10/2014 12:11:32	1	2	57	3	05/10/2014	6174	1	2	1	2	$4.50	$0.00			
Original	3	Ticket	439	CASH	05/10/2014 12:11:53	1	2	247	2	05/10/2014	2320	1	2	1	2	17.45	0.00			
Original	3	Ticket	440	CASH	05/10/2014 12:14:06	1	2	48	1	05/10/2014	8571	1	2	1	2	4.95	0.00			
Original	3	Ticket	441	CASH	05/10/2014 12:14:24	1	2	57	3	05/10/2014	6189	1	2	1	2	4.50	0.00			
Original	3	Ticket	442	CASH	05/10/2014 12:16:10	1	2	57	1	05/10/2014	929	1	2	1	2	4.50	0.00			
Original	3	Ticket	443	CASH	05/10/2014 12:17:12	1	2	67	1	05/10/2014	3907	1	2	1	2	3.05	0.00			
Original	3	Ticket	444	CASH	05/10/2014 12:17:42	1	2	57	1	05/10/2014	931	1	2	1	2	4.50	0.00			
Original	3	Ticket	445	CASH	05/10/2014 12:18:33	1	2	312	1	05/10/2014	4994	1	2	1	2	23.70	0.00			
Original	3	Ticket	446	CASH	05/10/2014 12:20:58	1	2	75	2	05/10/2014	5156	1	2	1	2	2.05	0.00			
Original	3	Ticket	447	CASH	05/10/2014 12:21:36	1	2	57	3	05/10/2014	6223	1	2	1	2	4.50	0.00			
Original	3	Ticket	448	CASH	05/10/2014 12:22:45	1	2	226	1	05/10/2014	980	1	2	1	2	15.40	0.00			
Original	3	Ticket	449	CASH	05/10/2014 12:23:40	1	2	75	4	05/10/2014	2049	1	2	1	2	2.05	0.00			
Original	3	Ticket	450	CASH	05/10/2014 12:24:04	1	2	110	2	05/10/2014	6069	1	2	1	2	2.60	0.00			
Original	3	Ticket	451	CASH	05/10/2014 12:24:35	1	2	57	3	05/10/2014	6228	1	2	1	2	4.50	0.00			
Original	3	Ticket	452	CASH	05/10/2014 12:24:56	1	2	75	1	05/10/2014	8782	1	2	1	2	2.05	0.00			
Original	3	Ticket	453	CASH	05/10/2014 12:27:29	1	2	57	1	05/10/2014	988	1	2	1	2	4.50	0.00			
Original	3	Ticket	454	CASH	05/10/2014 12:27:50	1	2	75	2	05/10/2014	5176	1	2	1	2	2.05	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	455	CASH	05/10/2014 12:28:18	1	2	57	3	05/10/2014	6300	1	2	1	2	$4.50	$0.00			
Original	3	Ticket	456	CASH	05/10/2014 12:28:43	1	2	57	3	05/10/2014	6278	1	2	1	2	4.50	0.00			
Original	3	Ticket	457	CASH	05/10/2014 12:28:58	1	2	57	3	05/10/2014	6279	1	2	1	2	4.50	0.00			
Original	3	Ticket	458	CASH	05/10/2014 12:29:14	1	2	110	2	05/10/2014	6080	1	2	1	2	2.60	0.00			71
Original	3	Ticket	459	CASH	05/10/2014 12:29:48	1	2	161	3	05/10/2014	4011	1	2	1	2	8.80	0.00			
Original	3	Ticket	460	CASH	05/10/2014 12:30:11	1	2	67	1	05/10/2014	3919	1	2	1	2	3.05	0.00			
Original	3	Ticket	461	CASH	05/10/2014 12:30:30	1	2	30	2	05/10/2014	506	1	2	1	2	7.80	0.00			
Original	3	Ticket	462	CASH	05/10/2014 12:31:02	1	2	75	1	05/10/2014	8794	1	2	1	2	2.05	0.00			
Original	3	Ticket	463	NONR	05/10/2014 12:31:37	1	2	110	2	04/26/2014	2827	1	2	1	2	0.00		xxxxx007890		
Original	3	Ticket	464	CASH	05/10/2014 12:31:55	1	2	247	2	05/10/2014	2519	1	2	1	2	17.45	0.00			
Original	3	Ticket	465	CASH	05/10/2014 12:32:20	1	2	30	3	05/10/2014	1034	1	2	1	2	7.80	0.00			
Original	3	Ticket	466	CASH	05/10/2014 12:32:45	1	2	39	2	05/10/2014	5786	1	2	1	2	6.45	0.00			
Original	3	Ticket	467	CASH	05/10/2014 12:33:09	1	2	48	4	05/10/2014	5830	1	2	1	2	4.95	0.00			
Original	3	Ticket	468	CASH	05/10/2014 12:33:30	1	2	57	1	05/10/2014	1006	1	2	1	2	4.50	0.00			
Original	3	Ticket	469	CASH	05/10/2014 12:33:55	1	2	57	1	05/10/2014	1035	1	2	1	2	4.50	0.00			
Original	3	Ticket	470	CASH	05/10/2014 12:35:14	1	2	75	2	05/10/2014	5192	1	2	1	2	2.05	0.00			
Original	3	Ticket	471	CASH	05/10/2014 12:36:09	1	2	326	5	05/10/2014	6169	1	2	1	2	25.60	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	472	CASH	05/10/2014 12:36:55	1	2	75	1	05/10/2014	8815	1	2	1	2	$2.05	$0.00			
Original	3	Ticket	473	CASH	05/10/2014 12:37:12	1	2	30	1	05/10/2014	4522	1	2	1	2	7.80	0.00			
Original	3	Ticket	474	CASH	05/10/2014 12:37:43	1	2	75	2	05/10/2014	5201	1	2	1	2	2.05	0.00			
Original	3	Ticket	475	CASH	05/10/2014 12:38:05	1	2	67	1	05/10/2014	3945	1	2	1	2	3.05	0.00			
Original	3	Ticket	476	CASH	05/10/2014 12:38:24	1	2	48	4	05/10/2014	5845	1	2	1	2	4.95	0.00			
Original	3	Ticket	477	CASH	05/10/2014 12:38:55	1	2	161	2	05/10/2014	1944	1	2	1	2	8.80	0.00			
Original	3	Ticket	478	CASH	05/10/2014 12:39:29	1	2	75	4	05/10/2014	2095	1	2	1	2	2.05	0.00			
Original	3	Ticket	479	CASH	05/10/2014 12:39:44	1	2	48	4	05/10/2014	5846	1	2	1	2	4.95	0.00			
Original	3	Ticket	480	CASH	05/10/2014 12:40:05	1	2	30	62	01/05/2014	6229	1	2	1	2	7.80	0.00			3
Original	3	Ticket	481	CASH	05/10/2014 12:40:31	1	2	57	3	05/10/2014	6368	1	2	1	2	4.50	0.00			
Original	3	Ticket	482	CASH	05/10/2014 12:40:59	1	2	57	1	05/10/2014	1066	1	2	1	2	4.50	0.00			
Original	3	Ticket	483	CASH	05/10/2014 12:41:20	1	2	75	2	05/10/2014	5204	1	2	1	2	2.05	0.00			
Original	3	Ticket	484	CASH	05/10/2014 12:41:36	1	2	75	2	05/10/2014	5205	1	2	1	2	2.05	0.00			
Original	3	Ticket	485	CASH	05/10/2014 12:41:58	1	2	146	1	05/10/2014	6718	1	2	1	2	6.45	0.00			
Original	3	Ticket	486	CASH	05/10/2014 12:42:31	1	2	48	4	05/10/2014	5859	1	2	1	2	4.95	0.00			
Original	3	Ticket	487	CASH	05/10/2014 12:43:21	1	2	242	1	05/10/2014	8570	1	2	1	2	16.95	0.00			
Original	3	Ticket	488	CASH	05/10/2014 12:44:04	1	2	57	3	05/10/2014	6410	1	2	1	2	4.50	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	489	CASH	05/10/2014 12:44:51	1	2	57	3	05/10/2014	6409	1	2	1	2	$4.50	$0.00			
Original	3	Ticket	490	CASH	05/10/2014 12:46:24	1	2	48	1	05/10/2014	8647	1	2	1	2	4.95	0.00			
Original	3	Ticket	578	CASH	05/10/2014 13:45:33	1	2	75	4	05/10/2014	2268	1	2	1	2	2.05	0.00			
Original	3	Ticket	579	CASH	05/10/2014 13:45:45	1	2	57	1	05/10/2014	1457	1	2	1	2	4.50	0.00			
Original	3	Ticket	580	CASH	05/10/2014 13:46:08	1	2	67	1	05/10/2014	4051	1	2	1	2	3.05	0.00			
Original	3	Ticket	581	CASH	05/10/2014 13:46:34	1	2	57	3	05/10/2014	6833	1	2	1	2	4.50	0.00			
Original	3	Ticket	582	CASH	05/10/2014 13:47:09	1	2	57	1	05/10/2014	1466	1	2	1	2	4.50	0.00			
Original	3	Ticket	583	CASH	05/10/2014 13:47:28	1	2	39	1	05/10/2014	7502	1	2	1	2	6.45	0.00			
Original	3	Ticket	584	CASH	05/10/2014 13:48:55	1	2	110	2	05/10/2014	6183	1	2	1	2	2.60	0.00			
Original	3	Ticket	585	CASH	05/10/2014 13:49:51	1	2	67	1	05/10/2014	4066	1	2	1	2	3.05	0.00			
Original	3	Ticket	586	CASH	05/10/2014 13:50:13	1	2	31	2	05/10/2014	7373	1	2	1	2	28.00	0.00			72
Original	3	Ticket	587	CASH	05/10/2014 13:51:27	1	2	75	4	05/10/2014	2286	1	2	1	2	2.05	0.00			
Original	3	Ticket	588	CASH	05/10/2014 13:51:42	1	2	146	1	05/10/2014	6925	1	2	1	2	6.45	0.00			
Original	3	Ticket	589	CASH	05/10/2014 13:54:18	1	2	57	1	05/10/2014	1516	1	2	1	2	4.50	0.00			
Original	3	Ticket	590	CASH	05/10/2014 13:55:21	1	2	110	2	05/10/2014	6203	1	2	1	2	2.60	0.00			
Original	3	Ticket	591	CASH	05/10/2014 13:55:47	1	2	75	4	05/10/2014	2296	1	2	1	2	2.05	0.00			
Original	3	Ticket	592	CASH	05/10/2014 13:56:29	1	2	67	1	05/10/2014	4082	1	2	1	2	3.05	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	593	CASH	05/10/2014 13:57:00	1	2	57	3	05/10/2014	6928	1	2	1	2	$4.50	$0.00			
Original	3	Ticket	594	CASH	05/10/2014 13:58:02	1	2	226	4	05/10/2014	3399	1	2	1	2	0.00	15.40			62 115 116
Original	3	Ticket	595	CASH	05/10/2014 13:59:46	1	2	57	3	05/10/2014	6916	1	2	1	2	4.50	0.00			
Original	3	Ticket	799	CASH	05/10/2014 16:31:09	1	2	67	1	05/10/2014	4388	1	2	1	2	3.05	0.00			72
Original	3	Ticket	800	CASH	05/10/2014 16:31:45	1	2	75	2	05/10/2014	5872	1	2	1	2	2.05	0.00			
Original	3	Ticket	801	CASH	05/10/2014 16:32:17	1	2	75	4	05/10/2014	2770	1	2	1	2	2.05	0.00			
Original	3	Ticket	802	CASH	05/10/2014 16:32:56	1	2	75	1	05/10/2014	315	1	2	1	2	2.05	0.00			
Original	3	Ticket	803	CASH	05/10/2014 16:33:11	1	2	75	4	05/10/2014	2771	1	2	1	2	2.05	0.00			
Original	3	Ticket	804	CASH	05/10/2014 16:33:36	1	2	30	3	05/10/2014	1774	1	2	1	2	7.80	0.00			
Original	3	Ticket	805	CASH	05/10/2014 16:35:27	1	2	75	4	05/10/2014	2777	1	2	1	2	2.05	0.00			
Original	3	Ticket	806	CASH	05/10/2014 16:35:41	1	2	75	1	05/10/2014	326	1	2	1	2	2.05	0.00			
Original	3	Ticket	807	CASH	05/10/2014 16:36:09	1	2	48	4	05/10/2014	6507	1	2	1	2	4.95	0.00			
Original	3	Ticket	808	CASH	05/10/2014 16:38:33	1	2	161	4	05/10/2014	6116	1	2	1	2	8.80	0.00			
Original	3	Ticket	809	CASH	05/10/2014 16:39:33	1	2	110	2	05/10/2014	6491	1	2	1	2	2.60	0.00			
Original	3	Ticket	810	CASH	05/10/2014 16:40:06	1	2	57	3	05/10/2014	7989	1	2	1	2	4.50	0.00			
Original	3	Ticket	811	CASH	05/10/2014 16:40:24	1	2	161	4	05/10/2014	6105	1	2	1	2	8.80	0.00			
Original	3	Ticket	812	CASH	05/10/2014 16:40:50	1	2	75	2	05/10/2014	5898	1	2	1	2	2.05	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	813	CASH	05/10/2014 16:42:39	1	2	67	1	05/10/2014	4433	1	2	1	2	$3.05	$0.00			
Original	3	Ticket	814	CASH	05/10/2014 16:43:20	2	3	75	2	05/10/2014	5907	2	3	2	3	3.05	0.00			
Original	3	Ticket	815	CASH	05/10/2014 16:44:01	1	2	57	3	05/10/2014	8002	1	2	1	2	4.50	0.00			
Original	3	Ticket	816	CASH	05/10/2014 16:44:38	1	2	57	1	05/10/2014	2611	1	2	1	2	4.50	0.00			
Original	4	Mixed	7005	ETC	05/10/2014 16:55:21			57	4	05/10/2014	0	0	0	2	3	0.00	0.00			
Original	4	Mixed	7006	CASH	05/10/2014 16:55:37	1	2	75	4	05/10/2014	2829	1	2	1	2	2.05	0.00			72
Original	4	Mixed	7007	ETC	05/10/2014 16:55:51			30	6	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7008	ETC	05/10/2014 16:55:53			326	6	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7009	CASH	05/10/2014 16:56:08	1	2	30	2	05/10/2014	1150	1	2	1	2	7.80	0.00			
Original	4	Mixed	7010	CASH	05/10/2014 16:56:41	1	2	30	2	05/10/2014	1151	1	2	1	2	7.80	0.00			
Original	4	Mixed	7011	ETC	05/10/2014 16:57:12			57	4	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7012	ETC	05/10/2014 16:57:15			110	1	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7013	ETC	05/10/2014 16:57:17			30	7	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7014	CASH	05/10/2014 16:57:43	1	2	57	3	05/10/2014	8087	1	2	1	2	4.50	0.00			
Original	4	Mixed	7015	ETC	05/10/2014 16:57:55			67	2	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7016	ETC	05/10/2014 16:57:58			57	1	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7017	CASH	05/10/2014 16:58:14	1	2	57	1	05/10/2014	2690	1	2	1	2	4.50	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	4	Mixed	7018	ETC	05/10/2014 16:58:26			48	3	05/10/2014	0	0	0	1	2	$0.00	$0.00			
Original	4	Mixed	7019	ETC	05/10/2014 16:58:31			67	1	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7020	CASH	05/10/2014 16:58:48	1	2	57	3	05/10/2014	8124	1	2	1	2	4.50	0.00			
Original	4	Mixed	7021	CASH	05/10/2014 16:59:08	1	2	75	4	05/10/2014	2840	1	2	1	2	2.05	0.00			
Original	4	Mixed	7022	ETC	05/10/2014 16:59:15			110	2	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	4	Mixed	7023	ETC	05/10/2014 16:59:19			57	1	05/10/2014	0	0	0	1	2	0.00	0.00			
Original	3	Ticket	895	CASH	05/10/2014 17:58:56	1	2	312	3	05/10/2014	447	1	2	1	2	23.70	0.00			72
Original	3	Ticket	896	CASH	05/10/2014 17:59:44	3	2	75	4	05/10/2014	3000	3	2	3	2	3.55	0.00			72
Original	3	Ticket	897	CASH	05/10/2014 18:00:38	1	2	110	2	05/10/2014	6596	1	2	1	2	2.60	0.00			
Original	3	Ticket	898	CASH	05/10/2014 18:00:54	1	2	30	1	05/10/2014	4977	1	2	1	2	7.80	0.00			
Original	3	Ticket	899	CASH	05/10/2014 18:01:54	1	2	57	64	01/05/2014	8632	1	2	1	2	4.50	0.00			3
Original	3	Ticket	900	CASH	05/10/2014 18:02:09	2	2	57	1	05/10/2014	3334	2	2	1	2	6.45	0.00			24
Original	3	Ticket	901	CASH	05/10/2014 18:02:32	1	2	57	1	05/10/2014	3356	1	2	1	2	4.50	0.00			
Original	3	Ticket	902	CASH	05/10/2014 18:05:01	1	2	39	2	05/10/2014	6505	1	2	1	2	6.45	0.00			
Original	3	Ticket	903	CASH	05/10/2014 18:05:43	1	2	75	2	05/10/2014	6162	1	2	1	2	2.05	0.00			
Original	3	Ticket	904	CASH	05/10/2014 18:06:13	1	2	39	3	05/10/2014	2611	1	2	1	2	6.45	0.00			
Original	3	Ticket	905	CASH	05/10/2014 18:06:36	1	2	226	4	05/10/2014	3858	1	2	1	2	15.40	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	906	CASH	05/10/2014 18:07:35	1	2	39	2	05/10/2014	6510	1	2	1	2	$6.45	$0.00			
Original	3	Ticket	907	CASH	05/10/2014 18:08:19	1	2	75	4	05/10/2014	3022	1	2	1	2	2.05	0.00			
Original	3	Ticket	908	CASH	05/10/2014 18:09:11	1	2	57	1	05/10/2014	3316	1	2	1	2	4.50	0.00			
Original	3	Ticket	909	CASH	05/10/2014 18:10:02	1	2	161	3	05/10/2014	5345	1	2	1	2	8.80	0.00			
Original	3	Ticket	910	CASH	05/10/2014 18:10:29	1	2	57	1	05/10/2014	3385	1	2	1	2	4.50	0.00			
Original	3	Ticket	911	CASH	05/10/2014 18:10:52	1	2	57	1	05/10/2014	3386	1	2	1	2	4.50	0.00			
Original	3	Ticket	912	CASH	05/10/2014 18:11:28	1	2	358	2	05/10/2014	2991	1	2	1	2	30.35	0.00			
Original	3	Ticket	913	NONR	05/10/2014 18:12:26	1	2	226	1	05/10/2014	1424	1	2	1	2	0.00		xxxxx006494		
Original	3	Ticket	914	CASH	05/10/2014 18:12:48	1	2	326	5	05/10/2014	8332	1	2	1	2	25.60	0.00			72
Original	3	Ticket	915	CASH	05/10/2014 18:13:55	1	2	39	3	05/10/2014	2627	1	2	1	2	6.45	0.00			
Original	3	Ticket	916	CASH	05/10/2014 18:14:11	1	2	312	1	05/10/2014	6137	1	2	1	2	23.70	0.00			72
Original	3	Ticket	917	CASH	05/10/2014 18:16:13	1	2	161	3	05/10/2014	5339	1	2	1	2	8.80	0.00			
Original	3	Ticket	918	CASH	05/10/2014 18:17:17	1	2	67	1	05/10/2014	4617	1	2	1	2	3.05	0.00			
Original	3	Ticket	919	CASH	05/10/2014 18:20:25	1	2	30	2	05/10/2014	1295	1	2	1	2	7.80	0.00			
Original	3	Ticket	920	CASH	05/10/2014 18:22:00	2	2	30	1	05/10/2014	4881	2	2	2	2	11.65	0.00			
Original	3	Ticket	921	CASH	05/10/2014 18:23:02	1	2	161	4	05/10/2014	6331	1	2	1	2	8.80	0.00			
Original	3	Ticket	922	CASH	05/10/2014 18:23:30	1	2	57	1	05/10/2014	3520	1	2	1	2	4.50	0.00			

Collector Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 009 DNG**

Collector Information
Number: **2084**
Name: **Barclay, Richard P.**

Tour of Duty
Start: **05/10/2014 11:01:06**
End: **05/10/2014 18:45:41**

Total Records Shown: **182**

05 009 DNG

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	3	Ticket	923	CASH	05/10/2014 18:23:53	1	2	75	4	05/10/2014	3053	1	2	1	2	$2.05	$0.00			72
Original	3	Ticket	924	CASH	05/10/2014 18:26:01	1	2	57	3	05/10/2014	8956	1	2	1	2	4.50	0.00			
Original	3	Ticket	925	CASH	05/10/2014 18:27:34	1	2	146	1	05/10/2014	7759	1	2	1	2	6.45	0.00			
Original	3	Ticket	926	CASH	05/10/2014 18:29:00	1	2	57	3	05/10/2014	2	1	2	1	2	4.50	0.00			
Original	3	Ticket	927	CASH	05/10/2014 18:30:03	1	2	30	2	05/10/2014	1363	1	2	1	2	7.80	0.00			72
Original	3	Ticket	928	CASH	05/10/2014 18:30:38	1	2	75	2	05/10/2014	6228	1	2	1	2	2.05	0.00			
Original	3	Ticket	929	CASH	05/10/2014 18:31:59	1	2	39	3	05/10/2014	2679	1	2	1	2	6.45	0.00			
Original	3	Ticket	930	CASH	05/10/2014 18:34:15	1	2	57	3	05/10/2014	8969	1	2	1	2	4.50	0.00			
Original	3	Ticket	931	CASH	05/10/2014 18:34:53	1	2	247	2	05/10/2014	3594	1	2	1	2	17.45	0.00			72
Original	3	Ticket	932	CASH	05/10/2014 18:36:00	1	2	57	1	05/10/2014	3617	1	2	1	2	4.50	0.00			
Original	3	Ticket	933	CASH	05/10/2014 18:38:45	1	2	75	2	05/10/2014	6245	1	2	1	2	2.05	0.00			
Original	3	Ticket	934	CASH	05/10/2014 18:43:02	1	2	286	1	05/10/2014	2623	1	2	1	2	21.30	0.00			
Original	3	Ticket	935	CASH	05/10/2014 18:45:15	2	4	110	2	05/10/2014	6640	2	4	2	4	4.00	0.00			72
															Total :	**$1,062.90**	**$15.40**			

~ End of Report ~

CRAS0203CollectorMonthlySum

Collector Monthly Summary

Collector Information
Collector: 2376 (A) Vitteck, Aimee B.

Data source
Ticket Transactions

Reporting Period
05/01/2014
05/31/2014

Coll Num	Collector Name	Tour of Duty Start	Tour of Duty End	Interchange	Cash Fare Paid	Total Cash Adj	Deposit	Other Adj	Variance	Charge Fare Paid	Insuf Funds	Transaction Count Cash	Card	ETC	Non-Rev	Total
2376	VITTECK, AIMEE B.	05/05/2014 11:32:51	05/05/2014 18:34:28	05 008 NST	$4,390.40	$1,549.05	$4,390.60	$0.00	$0.20	$0.00	$0.00	249	0	1	3	253
2376	VITTECK, AIMEE B.	05/06/2014 11:28:49	05/06/2014 18:41:07	05 008 NST	6,421.70	86.15	6,421.45	0.00	-0.25	0.00	27.65	331	0	0	7	338
2376	VITTECK, AIMEE B.	05/07/2014 11:32:36	05/07/2014 18:32:20	05 008 NST	1,626.40	0.00	1,626.70	0.00	0.30	0.00	5.90	256	0	0	5	261
2376	VITTECK, AIMEE B.	05/08/2014 11:32:41	05/08/2014 18:33:01	05 008 NST	3,403.20	0.00	3,403.30	0.00	0.10	36.15	0.00	299	1	0	7	307
2376	VITTECK, AIMEE B.	05/10/2014 15:56:51	05/10/2014 22:00:34	05 008 NST	3,105.90	0.00	3,106.15	0.00	0.25	0.00	10.20	335	0	3	0	338
2376	VITTECK, AIMEE B.	05/11/2014 14:46:46	05/11/2014 22:40:03	05 008 NST	6,331.10	0.00	6,331.25	0.00	0.15	0.00	94.55	408	0	2	1	411
2376	VITTECK, AIMEE B.	05/12/2014 14:45:15	05/12/2014 22:46:42	05 008 NST	9,414.25	101.90	9,414.30	0.00	0.05	0.00	94.20	482	0	2	5	489
2376	VITTECK, AIMEE B.	05/15/2014 00:25:28	05/15/2014 05:29:12	05 008 NST	1,378.40	0.00	1,378.30	0.00	-0.10	0.00	0.00	60	0	1	0	61
2376	VITTECK, AIMEE B.	05/16/2014 11:33:22	05/16/2014 18:33:38	05 008 NST	2,354.90	0.00	2,354.75	0.00	-0.15	50.10	2.60	322	2	1	4	329
2376	VITTECK, AIMEE B.	05/17/2014 14:46:00	05/17/2014 22:40:11	05 008 NST	5,696.80	0.00	5,697.00	0.00	0.20	0.00	4.50	312	0	2	0	314
2376	VITTECK, AIMEE B.	05/20/2014 06:45:40	05/20/2014 14:43:56	05 008 NST	3,458.40	0.00	3,459.25	0.00	0.85	4.00	78.00	573	1	1	64	639
				Collector Total:	**$47,581.45**	**$1,737.10**	**$47,583.05**	**$0.00**	**$1.60**	**$90.25**	**$317.60**	**3,627**	**4**	**13**	**96**	**3,740**

~ End of Report ~

CRAS0103CollectorTODSum

Collector Tour of Duty Summary

Road Information
Highway: **Toll 76-276**
Interchange: **05 007 IRW**

Collector Information
Number: **2001**
Name: **AGNELLO, GRETCHEN M.**

Tour of Duty
Start: **05/10/2014 14:44:57**
End: **05/10/2014 22:43:48**

Original Cash Fare Paid	$1,703.90	Total Cash Fare Paid	$1,703.90	Deposit	$1,703.90
(+) Trans Adjustments	$0.00	(+) Charge Fare Paid	$0.00	(-) Total Cash Fare Paid	$1,703.90
Other Adjustments	$0.00				
Total Cash Fare Paid:	**$1,703.90**	**Total Fare:**	**$1,703.90**	**Collector Variance:**	**$0.00**
		Insufficient Funds	**$11.20**		

Re-Classifications		Collector Functions		Vehicle Tracking and Exceptional Time		U-Turn		Abnormal Exit Info		Transactions	
Visual Coll. Init.	2	Axles Corr.	3	Non-Proc.Trans.	0	Auth.	0	Insuf. Fund	1	Invalid Error Key	0
Visual Term Init.	0	Regroups	0	Back Out	3	MIN. $	0	Lost Ticket	0	Tickets Not Read	0
Automatic	2	Regroup Removed Axles	0	Reverse RunThrough	0	MAX. $	0	Tows	0	Cards Not Read	0
Increm. Ow Axle(s)	0	Tandem Lane Pass-Key	0	Exceptional Time	0			Run Through	0	Entry Break Downs	1
		Barcode Scanner	4								

Lane			Segment			Vehicle Counts By Class				Transaction Count					
Num	Type	Mode	Start	End	Auto Seg	Class 1	Class 2 - 8	Class 9	UO Count	Cash	Charge	Non-Rev	ETC	Total	Cash Fare Paid
5	SX	Ticket	05/10/2014 14:44:57	05/10/2014 16:22:32	No	150	5	0	4	153	0	0	2	155	$480.55
5	SX	Ticket	05/10/2014 16:41:53	05/10/2014 18:42:20	No	187	1	0	5	188	0	0	0	188	646.50
5	SX	Ticket	05/10/2014 19:21:18	05/10/2014 21:24:21	No	130	1	0	6	131	0	0	2	133	381.05
5	SX	Ticket	05/10/2014 21:43:09	05/10/2014 22:43:48	No	54	3	0	1	57	0	0	0	57	195.80
					Total:	**521**	**10**	**0**	**16**	**529**	**0**	**0**	**4**	**533**	**$1,703.90**

~ End of Report ~

CRTH1755CorTxn_T

Correlated Transactions (Date/Time Range)

Road Information
Highway: Toll 76-276, Toll 476
From Interchange: 05 007 IRW
To Interchange: 05 006 PIT

Transponder Information
Transponder #: (All)
Issuing Agency: (All)

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period
From: 05/10/2014 00:00:00
To: 05/10/2014 00:09:59

Transaction Information
Transaction Type: (All)
Transaction Status: Sent to CSC

TOTAL Transaction Count: 1

Exit Transaction ID	Issuing Agency	Transponder #	Entry			Exit			Class	Entry DateTime	Exit DateTime
			MP	Interchange	Lane	MP	Interchange	Lane			
5117	006	01072260	067	Irwin	2	057	Pittsburgh	7	2	5/9/2014 23:52:59	5/10/2014 00:05:46

~ End of Report ~

CRTH1300CntPct_Grp

Counts & Percentages (Daily)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period
05/10/2014

Exit - District 1

MP	Interchange		All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
067	**Irwin**												
ETC		Count	5,435	436	4,999	134	36	29	74	80	76	7	0
		%		8.02	91.98	2.47	0.66	0.53	1.36	1.47	1.40	0.13	0.00
Non-ETC		Count	3,088	73	3,015	42	6	14	2	1	7	1	0
		%		2.36	97.64	1.36	0.19	0.45	0.06	0.03	0.23	0.03	0.00
Combined		Count	8,523	509	8,014	176	42	43	76	81	83	8	0
		%		5.97	94.03	2.07	0.49	0.50	0.89	0.95	0.97	0.09	0.00

Counts & Percentages (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **05 007 IRW**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/10/2014

Exit - District 1

MP	Interchange		All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
District 1 Exit Total													
ETC		Count	5,435	436	4,999	134	36	29	74	80	76	7	0
		%		8.02	91.98	2.47	0.66	0.53	1.36	1.47	1.40	0.13	0.00
Non-ETC		Count	3,088	73	3,015	42	6	14	2	1	7	1	0
		%		2.36	97.64	1.36	0.19	0.45	0.06	0.03	0.23	0.03	0.00
Combined		Count	8,523	509	8,014	176	42	43	76	81	83	8	0
		%		5.97	94.03	2.07	0.49	0.50	0.89	0.95	0.97	0.09	0.00

Counts & Percentages (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

Entry - District 1

MP	Interchange		All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
067	**Irwin**												
ETC		Count	5,183	412	4,771	155	15	47	94	50	47	4	0
		%		7.95	92.05	2.99	0.29	0.91	1.81	0.96	0.91	0.08	0.00
Non-ETC		Count	3,100	123	2,977	82	10	11	11	1	6	2	0
		%		3.97	96.03	2.65	0.32	0.35	0.35	0.03	0.19	0.06	0.00
Combined		Count	8,283	535	7,748	237	25	58	105	51	53	6	0
		%		6.46	93.54	2.86	0.30	0.70	1.27	0.62	0.64	0.07	0.00

Counts & Percentages (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**District 1**	**Audit Status:**	**Audited**	
Interchange:	**05 007 IRW**			

Entry - District 1

MP Interchange		All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
District 1 Entry Total												
ETC	Count	5,183	412	4,771	155	15	47	94	50	47	4	0
	%		7.95	92.05	2.99	0.29	0.91	1.81	0.96	0.91	0.08	0.00
Non-ETC	Count	3,100	123	2,977	82	10	11	11	1	6	2	0
	%		3.97	96.03	2.65	0.32	0.35	0.35	0.03	0.19	0.06	0.00
Combined	Count	8,283	535	7,748	237	25	58	105	51	53	6	0
	%		6.46	93.54	2.86	0.30	0.70	1.27	0.62	0.64	0.07	0.00

~ End of Report ~

CRTH1301CntPctDirection_Grp

Counts & Percentages By Direction (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**District 1**	**Audit Status:**	**Audited**	
Interchange:	**01 103 M15**			

Exit - District 1

MP	Interchange		All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
015	**Ramp M15 - Northbound**												
ETC		Count	25	1	24	0	0	1	0	0	0	0	0
		%		4.00	96.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Non-ETC		Count	39	0	39	0	0	0	0	0	0	0	0
		%		0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combined		Count	64	1	63	0	0	1	0	0	0	0	0
		%		1.56	98.44	0.00	0.00	1.56	0.00	0.00	0.00	0.00	0.00
015	**Ramp M15 - Southbound**												
ETC		Count	18	1	17	0	0	1	0	0	0	0	0
		%		5.56	94.44	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00
Non-ETC		Count	16	0	16	0	0	0	0	0	0	0	0
		%		0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combined		Count	34	1	33	0	0	1	0	0	0	0	0
		%		2.94	97.06	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00
015	**Ramp M15 - Total**												
ETC		Count	43	2	41	0	0	2	0	0	0	0	0
		%		4.65	95.35	0.00	0.00	4.65	0.00	0.00	0.00	0.00	0.00
Non-ETC		Count	55	0	55	0	0	0	0	0	0	0	0
		%		0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combined		Count	98	2	96	0	0	2	0	0	0	0	0
		%		2.04	97.96	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00

Counts & Percentages By Direction (Daily)

Road Information
Highway: **Toll 43 (MF)**
District: **District 1**
Interchange: **01 103 M15**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/10/2014

Exit - District 1

MP Interchange		All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
District 1 - Northbound												
ETC	Count	25	1	24	0	0	1	0	0	0	0	0
	%		4.00	96.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Non-ETC	Count	39	0	39	0	0	0	0	0	0	0	0
	%		0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combined	Count	64	1	63	0	0	1	0	0	0	0	0
	%		1.56	98.44	0.00	0.00	1.56	0.00	0.00	0.00	0.00	0.00
District 1 - Southbound												
ETC	Count	18	1	17	0	0	1	0	0	0	0	0
	%		5.56	94.44	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00
Non-ETC	Count	16	0	16	0	0	0	0	0	0	0	0
	%		0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combined	Count	34	1	33	0	0	1	0	0	0	0	0
	%		2.94	97.06	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00
District 1 - Total												
ETC	Count	43	2	41	0	0	2	0	0	0	0	0
	%		4.65	95.35	0.00	0.00	4.65	0.00	0.00	0.00	0.00	0.00
Non-ETC	Count	55	0	55	0	0	0	0	0	0	0	0
	%		0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combined	Count	98	2	96	0	0	2	0	0	0	0	0
	%		2.04	97.96	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00

~ End of Report ~

CRTH5150CSCTrfRev_R

CSC Accounting Traffic & Revenue (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Agency:	**004 New York State Thruway Auth**	**Audit Status:**	**Audited**	**05/10/2014**

004 New York State Thruway Authority

Cost Center	Interchange	MP	Traffic	Revenue
20150	California	035	99	$212.50
20160	Ramp M39	039	4	11.04
20170	M52	052	50	84.63
20190	M5	005	102	287.92
20200	Ramp M44	044	2	1.38
20210	Ramp M48	048	11	11.73
20810	M19	019	56	189.34
20820	Ramp M22	022	1	0.69
20840	Ramp M15	015	3	4.14
		Total :	**328**	**$803.37**

~ End of Report ~

CRTH5050CSCRptOrp_R

CSC Repeat Orphans (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Issuing Agency:	**005 Port Authority of New York &**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Orphan Count ≥:	**5**	**Audit Status:**	**Audited**	**05/10/2014**
Transponder #:	**(All)**			

Orphan Counts

Issuing Agency	Transponder #	Entry	Exit	Total	Date / Time	MP Interchange	Lane
005 Port Authority of New York & New Jersey							
	01856029	1	0	1	05/07/2014 14:04:12	247 Harrisburg East	3
		1	0	1	05/10/2014 21:33:42	359 Delaware River Bridge	3
		0	1	1	05/04/2014 18:43:54	057 Pittsburgh	7
		0	1	1	05/08/2014 17:51:56	242 Harrisburg West	5
		0	1	1	05/10/2014 08:41:35	359 Delaware River Bridge	10
	Total:	**2**	**3**	**5**			
	02080288	1	0	1	05/01/2014 15:59:17	312 Downingtown	2
		1	0	1	05/06/2014 15:28:05	351 Bensalem	4
		1	0	1	05/09/2014 17:49:01	312 Downingtown	2
		0	1	1	05/01/2014 13:48:00	312 Downingtown	5
		0	1	1	05/02/2014 17:40:56	298 Morgantown	7
		0	1	1	05/06/2014 10:06:40	020 Mid-County	8
	Total:	**3**	**3**	**6**			
	02502877	1	0	1	05/02/2014 12:12:49	343 Willow Grove	2
		1	0	1	05/06/2014 12:23:07	343 Willow Grove	2
		1	0	1	05/07/2014 12:28:02	343 Willow Grove	1
		0	1	1	05/01/2014 22:13:11	343 Willow Grove	10
		0	1	1	05/05/2014 22:04:14	343 Willow Grove	10
		0	1	1	05/06/2014 22:01:29	343 Willow Grove	10
	Total:	**3**	**3**	**6**			
	02937284	1	0	1	05/03/2014 03:28:22	020 Mid-County	5
		1	0	1	05/08/2014 04:08:06	020 Mid-County	5
		1	0	1	05/08/2014 05:09:16	343 Willow Grove	3
		1	0	1	05/09/2014 03:12:56	020 Mid-County	5
		1	0	1	05/10/2014 01:29:21	351 Bensalem	4

CSC Repeat Orphans (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Issuing Agency:	**005 Port Authority of New York & New Jersey**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Orphan Count ≥:	**5**	**Audit Status:**	**Audited**	**05/10/2014**
Transponder #:	**(All)**			

		Orphan Counts					
Issuing Agency	**Transponder #**	**Entry**	**Exit**	**Total**	**Date / Time**	**MP Interchange**	**Lane**
005 Port Authority of New York & New Jersey							
	02937284	0	1	1	05/01/2014 04:36:12	351 Bensalem	11
		0	1	1	05/03/2014 02:30:57	020 Mid-County	7
		0	1	1	05/06/2014 04:04:31	339 Fort Washington	8
		0	1	1	05/09/2014 02:42:26	020 Mid-County	8
	Total:	**5**	**4**	**9**			
	Agency Total:	**13**	**13**	**26**			

~ End of Report ~

CRAS0121CumulativeShortages

Cumulative Shortages

Road Information
District: **District 1**
Interchange: **(All)**
Cumulative Shortages Greater Than: **$1.00**

Reporting Period
05/10/2014
05/10/2014

Collector Number	Collector Name	Start of Tour	End of Tour	Variance
2280	CALABRESE, CRAIG A.	5/10/2014 7:56:28AM	5/10/2014 1:57:27PM	-$1.15
			Cumulative Shortages:	**-$1.15**
2322	BORSARI, WILLIAM J.	5/10/2014 2:46:31PM	5/10/2014 10:42:47PM	-1.70
			Cumulative Shortages:	**-$1.70**
2718	HAYDEN, DENISE L.	5/10/2014 6:37:37AM	5/10/2014 2:46:53PM	-4.00
			Cumulative Shortages:	**-$4.00**
2996	FABEC, MARY ANN	5/10/2014 6:45:59AM	5/10/2014 2:46:47PM	-2.40
			Cumulative Shortages:	**-$2.40**
			Total Cumulative Shortages:	**-$9.25**

~ End of Report ~

CRAS0109DailyBankDeposit

Daily Bank Deposit

Bank Information
Bank: **Penn Security**

Reporting Period
05/10/2014

Bank Name		Amount Deposited
Penn Security		
Penn Security District		
Keyser Avenue		$3,606.79
Clarks Summit		4,638.42
	District Total:	**$8,245.21**
	Bank Total:	**$8,245.21**

End of Report

CRAS0114DailyCollectorShortage

Daily Collector Shortage

Road Information
Interchange: (All)

Data source
Ticket Transactions

Reporting Period
05/10/2014

Tour of Duty

Interchange Name	Lanes	Collector Number	Collector Name	Start	End	Variance	Cash Count
02 120 E30	1	2381	KONCKI, PAMELA M.	05/10/2014 06:40:00	05/10/2014 14:42:08	-$12.75	541
02 123 W18	1, 6	2767	FUGAZZI, JOHN C.	05/10/2014 14:48:16	05/10/2014 21:29:52	-10.55	235
05 004 BVL	4	2668	HOLT, DIRK A.	05/10/2014 06:41:34	05/10/2014 14:46:23	-21.45	341
05 007 IRW	4	3192	MOSS, MARGARET G.	05/10/2014 14:46:50	05/10/2014 22:45:51	-10.70	360
05 023 DWT	5, 8	2022	SIMMONS, KAYLA C.	05/10/2014 06:53:10	05/10/2014 14:53:54	-8.70	481
05 025 NOR	10	3046	GROSSMANN, EUGENE J.	05/10/2014 13:37:19	05/10/2014 21:32:27	-8.25	464
05 027 WIG	10, 99	3097	DAVIDSON, COLEEN M.	05/10/2014 05:57:50	05/10/2014 13:34:40	-5.20	648
06 033 LEV	11	8277	GOLDBERG, NICHOLAS G.	05/10/2014 07:04:11	05/10/2014 14:46:10	-27.95	627
06 035 POC	4	2134	BASTIS, DAVID P.	05/09/2014 22:46:50	05/10/2014 06:49:52	-13.75	269
06 035 POC	5	2261	STILITINO, ANTHONY L.	05/10/2014 06:55:44	05/10/2014 14:53:40	-11.60	701

~ End of Report ~

CRAS0110Deposits

Deposits By Collector

Road Information

Interchange: 01 112 CAL

Reporting Period
05/10/2014

01 112 CAL

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2083	05/10/2014 14:27:45	05/16/2014 09:46:54	$1,533.80	Manual
Lash, Steven	2099	05/10/2014 14:32:46	05/16/2014 09:46:36	1,460.00	Manual
				$2,993.80	

Deposits By Collector

Road Information
Interchange: 02 120 E30

Reporting Period
05/10/2014

02 120 E30

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2044	05/10/2014 06:39:42	05/12/2014 13:09:45	$159.80	Manual
Lash, Steven	2091	05/10/2014 22:08:25	05/12/2014 13:09:49	342.55	Manual
Lash, Steven	2093	05/10/2014 22:26:53	05/12/2014 13:09:53	685.30	Manual
Lash, Steven	2093	05/10/2014 14:00:00	05/12/2014 13:10:01	364.00	Manual
Lash, Steven	2095	05/10/2014 22:36:40	05/12/2014 13:10:05	640.70	Manual
Lash, Steven	2381	05/10/2014 14:42:08	05/12/2014 13:10:10	630.65	Manual
Lash, Steven	2636	05/10/2014 14:42:48	05/12/2014 13:10:14	724.60	Manual
Lash, Steven	2840	05/10/2014 06:38:57	05/12/2014 13:10:18	196.65	Manual
				$3,744.25	

Deposits By Collector

Road Information
Interchange: 02 123 W18

Reporting Period
05/10/2014

02 123 W18

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2369	05/10/2014 14:47:54	05/12/2014 13:10:23	$1,006.90	Manual
Lash, Steven	2407	05/10/2014 06:42:28	05/12/2014 13:10:31	304.55	Manual
Lash, Steven	2407	05/10/2014 13:36:48	05/12/2014 13:10:35	516.10	Manual
Lash, Steven	2590	05/10/2014 14:51:04	05/12/2014 13:10:40	1,108.35	Manual
Lash, Steven	2723	05/10/2014 06:50:54	05/12/2014 13:10:44	301.10	Manual
Lash, Steven	2767	05/10/2014 21:29:52	05/12/2014 13:10:48	482.95	Manual
Lash, Steven	2862	05/10/2014 22:44:03	05/12/2014 13:10:52	1,087.80	Manual
Lash, Steven	2966	05/10/2014 22:48:46	05/12/2014 13:10:57	983.80	Manual
				$5,791.55	

Deposits By Collector

Road Information
Interchange: 03 131 M66

Reporting Period
05/10/2014

03 131 M66

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2118	05/10/2014 14:08:08	05/12/2014 13:11:01	$765.55	Manual
Lash, Steven	2141	05/10/2014 21:50:45	05/12/2014 13:11:05	72.30	Manual
Lash, Steven	2172	05/10/2014 19:01:55	05/12/2014 13:11:41	1,678.35	Manual
Lash, Steven	2204	05/10/2014 06:44:51	05/12/2014 13:11:45	309.55	Manual
Lash, Steven	2246	05/10/2014 22:42:32	05/12/2014 13:11:50	1,030.65	Manual
Lash, Steven	2956	05/10/2014 06:45:48	05/12/2014 13:11:54	387.80	Manual
Lash, Steven	2996	05/10/2014 14:46:47	05/12/2014 13:11:58	1,392.15	Manual
Lash, Steven	3076	05/10/2014 22:40:45	05/21/2014 10:36:43	1,055.05	Manual
				$6,691.40	

Deposits By Collector

Road Information
Interchange: 05 004 BVL

Reporting Period
05/10/2014

05 004 BVL

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2047	05/10/2014 14:44:11	05/13/2014 09:49:59	$1,938.15	Manual
Lash, Steven	2094	05/10/2014 21:54:48	05/21/2014 08:52:48	586.45	Manual
Lash, Steven	2154	05/10/2014 22:50:20	05/13/2014 09:50:07	2,288.30	Manual
Lash, Steven	2206	05/10/2014 18:47:34	05/13/2014 09:50:12	1,230.50	Manual
Lash, Steven	2484	05/10/2014 06:41:01	05/13/2014 09:50:15	608.00	Manual
Lash, Steven	2668	05/10/2014 14:46:23	05/13/2014 09:50:21	815.25	Manual
				$7,466.65	

Deposits By Collector

Road Information
Interchange: 05 005 ALV

Reporting Period
05/10/2014

05 005 ALV

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2011	05/10/2014 06:47:32	05/21/2014 10:47:31	$1,131.65	Manual
Lash, Steven	2011	05/10/2014 14:16:43	05/21/2014 10:47:38	645.15	Manual
Lash, Steven	2033	05/10/2014 14:50:11	05/21/2014 10:44:50	1,757.20	Manual
Lash, Steven	2034	05/10/2014 22:01:08	05/21/2014 10:45:22	1,779.48	Manual
Lash, Steven	2245	05/10/2014 14:50:12	05/21/2014 10:45:50	1,285.20	Manual
Lash, Steven	2395	05/10/2014 22:41:16	05/13/2014 09:50:56	956.60	Manual
Lash, Steven	2450	05/10/2014 18:40:09	05/13/2014 09:51:03	1,337.65	Manual
Lash, Steven	2815	05/10/2014 22:40:50	05/13/2014 09:51:07	1,585.15	Manual
				$10,478.08	

Deposits By Collector

Road Information
Interchange: 05 006 PIT

Reporting Period
05/10/2014

05 006 PIT

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2058	05/10/2014 14:45:29	05/13/2014 09:51:12	$5,631.20	Manual
Lash, Steven	2205	05/10/2014 22:02:08	05/13/2014 09:51:16	2,685.50	Manual
Lash, Steven	2215	05/10/2014 22:43:08	05/13/2014 09:51:21	5,396.25	Manual
Lash, Steven	2247	05/10/2014 06:46:35	05/13/2014 09:51:25	2,544.39	Manual
Lash, Steven	2254	05/10/2014 22:43:19	05/13/2014 09:51:30	4,679.85	Manual
Lash, Steven	2335	05/10/2014 06:46:04	05/13/2014 09:51:34	2,016.30	Manual
Lash, Steven	2448	05/10/2014 13:59:51	05/13/2014 09:51:38	2,152.60	Manual
Lash, Steven	2573	05/10/2014 14:44:04	05/13/2014 09:51:42	2,514.00	Manual
Lash, Steven	2772	05/10/2014 18:46:06	05/13/2014 09:51:45	2,099.00	Manual
Lash, Steven	2835	05/10/2014 14:45:10	05/21/2014 09:25:55	3,419.05	Manual
Lash, Steven	3008	05/10/2014 14:47:46	05/13/2014 09:51:57	2,906.85	Manual
Lash, Steven	3164	05/10/2014 22:30:52	05/13/2014 09:52:01	2,778.00	Manual
				$38,822.99	

Deposits By Collector

Road Information
Interchange: 05 007 IRW

Reporting Period
05/10/2014

05 007 IRW

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2001	05/10/2014 22:43:48	05/13/2014 09:52:05	$1,703.90	Manual
Lash, Steven	2037	05/10/2014 06:42:53	05/13/2014 09:52:10	1,294.25	Manual
Lash, Steven	2106	05/10/2014 14:44:49	05/13/2014 09:52:14	1,333.80	Manual
Lash, Steven	2225	05/10/2014 14:45:51	05/13/2014 09:52:18	1,362.95	Manual
Lash, Steven	2284	05/10/2014 22:35:25	05/13/2014 09:52:22	1,395.40	Manual
Lash, Steven	2619	05/10/2014 06:43:02	05/13/2014 09:52:27	153.55	Manual
Lash, Steven	2622	05/10/2014 14:44:37	05/13/2014 09:52:31	1,664.80	Manual
Lash, Steven	3192	05/10/2014 22:45:51	05/13/2014 09:52:36	1,470.05	Manual
				$10,378.70	

Deposits By Collector

Road Information
Interchange: 05 008 NST

Reporting Period
05/10/2014

05 008 NST

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2007	05/10/2014 22:47:08	05/13/2014 13:14:44	$3,781.00	Manual
Lash, Steven	2128	05/10/2014 22:44:20	05/13/2014 13:14:48	6,401.90	Manual
Lash, Steven	2280	05/10/2014 13:57:27	05/13/2014 13:14:53	3,375.80	Manual
Lash, Steven	2322	05/10/2014 22:42:47	05/13/2014 13:14:57	4,751.50	Manual
Lash, Steven	2376	05/10/2014 22:00:34	05/13/2014 13:15:02	3,106.15	Manual
Lash, Steven	2443	05/10/2014 14:45:33	05/13/2014 13:15:06	5,062.75	Manual
Lash, Steven	2682	05/10/2014 06:40:37	05/13/2014 13:15:10	3,532.55	Manual
Lash, Steven	2688	05/10/2014 06:20:31	05/13/2014 13:15:18	4,897.85	Manual
Lash, Steven	2688	05/10/2014 14:45:53	05/13/2014 13:15:22	3,739.60	Manual
Lash, Steven	2718	05/10/2014 14:46:53	05/13/2014 13:15:27	7,419.50	Manual
				$46,068.60	

Deposits By Collector

Road Information
Interchange: 05 009 DNG

Reporting Period
05/10/2014

05 009 DNG

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2084	05/10/2014 18:45:41	05/13/2014 13:15:32	$1,063.40	Manual
Lash, Steven	2188	05/10/2014 15:00:04	05/13/2014 13:15:38	3,680.90	Manual
Lash, Steven	2244	05/10/2014 23:01:39	05/13/2014 13:15:42	2,048.40	Manual
Lash, Steven	2270	05/10/2014 07:00:44	05/13/2014 13:15:46	775.35	Manual
				$7,568.05	

Deposits By Collector

Road Information
Interchange: 05 010 SOM

Reporting Period
05/10/2014

05 010 SOM

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2036	05/10/2014 19:01:49	05/13/2014 13:15:51	$1,344.45	Manual
Lash, Steven	2116	05/10/2014 07:00:27	05/13/2014 13:15:55	1,230.80	Manual
Lash, Steven	2406	05/10/2014 14:59:34	05/13/2014 13:15:59	3,951.30	Manual
Lash, Steven	2495	05/10/2014 23:00:28	05/13/2014 13:16:06	3,066.90	Manual
				$9,593.45	

Deposits By Collector

Road Information
Interchange: 05 011 BED

Reporting Period
05/10/2014

05 011 BED

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2127	05/10/2014 23:00:08	05/13/2014 13:16:10	$4,778.05	Manual
Lash, Steven	2228	05/10/2014 13:18:00	05/13/2014 13:16:16	1,577.50	Manual
Lash, Steven	2405	05/10/2014 19:00:33	05/13/2014 13:16:20	2,156.00	Manual
Lash, Steven	2532	05/10/2014 07:00:33	05/13/2014 13:16:25	2,776.75	Manual
Lash, Steven	2786	05/10/2014 22:58:58	05/13/2014 13:16:29	863.65	Manual
Lash, Steven	2806	05/10/2014 15:01:03	05/13/2014 13:16:33	7,641.15	Manual
				$19,793.10	

Deposits By Collector

Road Information
Interchange: 05 012 BRZ

Reporting Period
05/10/2014

05 012 BRZ

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2103	05/10/2014 15:00:24	05/13/2014 13:16:40	$6,259.95	Manual
Lash, Steven	2130	05/10/2014 07:00:05	05/13/2014 13:16:48	3,997.15	Manual
Lash, Steven	2130	05/10/2014 13:45:16	05/13/2014 13:16:57	2,655.40	Manual
Lash, Steven	2174	05/10/2014 23:00:09	05/14/2014 12:33:32	4,052.25	Manual
Lash, Steven	2199	05/10/2014 15:00:37	05/13/2014 13:17:06	7,275.90	Manual
Lash, Steven	2239	05/10/2014 23:01:40	05/13/2014 13:17:11	3,027.05	Manual
Lash, Steven	2318	05/10/2014 23:02:35	05/13/2014 13:17:17	5,615.35	Manual
Lash, Steven	2411	05/10/2014 15:00:15	05/13/2014 13:17:22	4,857.10	Manual
Lash, Steven	2413	05/10/2014 07:00:28	05/13/2014 13:17:28	1,713.80	Manual
Lash, Steven	2517	05/10/2014 23:01:32	05/13/2014 13:17:32	6,202.10	Manual
				$45,656.05	

Deposits By Collector

Road Information
Interchange: 05 013 FOL

Reporting Period
05/10/2014

05 013 FOL

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2325	05/10/2014 15:00:18	05/13/2014 13:17:36	$1,164.80	Manual
Lash, Steven	2570	05/10/2014 23:00:38	05/13/2014 13:17:48	1,024.00	Manual
Lash, Steven	2757	05/10/2014 07:00:42	05/13/2014 13:17:52	287.90	Manual
				$2,476.70	

Deposits By Collector

Road Information
Interchange: 05 014 WIH

Reporting Period
05/10/2014

05 014 WIH

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2026	05/10/2014 07:00:05	05/13/2014 13:17:56	$159.90	Manual
Lash, Steven	2049	05/10/2014 15:01:13	05/13/2014 13:18:00	777.00	Manual
Lash, Steven	2410	05/10/2014 23:00:09	05/13/2014 13:18:04	799.65	Manual
				$1,736.55	

Deposits By Collector

Road Information
Interchange: 05 015 BLM

Reporting Period
05/10/2014

05 015 BLM

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2101	05/10/2014 07:00:22	05/13/2014 13:18:09	$256.70	Manual
Lash, Steven	2198	05/10/2014 15:00:36	05/13/2014 13:18:19	1,888.25	Manual
Lash, Steven	2385	05/10/2014 23:00:06	05/13/2014 13:18:23	1,701.50	Manual
				$3,846.45	

Deposits By Collector

Road Information
Interchange: 05 016 CAR

Reporting Period
05/10/2014

05 016 CAR

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2023	05/10/2014 10:53:09	05/13/2014 13:18:27	$916.80	Manual
Lash, Steven	2035	05/10/2014 22:49:55	05/13/2014 13:18:33	6,948.90	Manual
Lash, Steven	2144	05/10/2014 14:50:13	05/13/2014 13:18:38	3,870.30	Manual
Lash, Steven	2180	05/10/2014 18:56:28	05/13/2014 13:18:42	2,599.75	Manual
Lash, Steven	2485	05/10/2014 14:01:43	05/13/2014 13:18:48	2,133.35	Manual
Lash, Steven	2488	05/10/2014 22:03:03	05/13/2014 13:18:52	3,553.85	Manual
Lash, Steven	2691	05/10/2014 06:50:32	05/13/2014 13:19:16	3,418.00	Manual
Lash, Steven	2830	05/10/2014 06:52:31	05/13/2014 13:19:20	1,973.90	Manual
Lash, Steven	2847	05/10/2014 14:48:55	05/13/2014 13:19:26	6,949.00	Manual
Lash, Steven	2971	05/10/2014 21:01:25	05/13/2014 13:19:30	457.95	Manual
Lash, Steven	2998	05/10/2014 22:54:38	05/13/2014 13:19:34	2,257.90	Manual
				$35,079.70	

Deposits By Collector

Road Information
Interchange: 05 017 GEP

Reporting Period
05/10/2014

05 017 GEP

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2088	05/10/2014 22:47:33	05/13/2014 13:19:40	$2,974.80	Manual
Lash, Steven	2274	05/10/2014 14:54:45	05/13/2014 13:19:45	2,583.25	Manual
Lash, Steven	2585	05/10/2014 06:54:28	05/13/2014 13:19:49	894.80	Manual
Lash, Steven	3128	05/10/2014 14:51:28	05/13/2014 13:19:54	2,619.50	Manual
Lash, Steven	3151	05/10/2014 22:52:29	05/13/2014 13:19:58	2,633.35	Manual
				$11,705.70	

Deposits By Collector

Road Information
Interchange: 05 018 HWS

Reporting Period
05/10/2014

05 018 HWS

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2017	05/10/2014 18:33:37	05/13/2014 13:51:46	$2,036.35	Manual
Lash, Steven	2135	05/10/2014 06:53:10	05/13/2014 13:51:52	1,591.25	Manual
Lash, Steven	2302	05/10/2014 14:56:06	05/13/2014 13:51:56	2,455.35	Manual
Lash, Steven	2852	05/10/2014 22:50:30	05/13/2014 13:52:01	3,687.60	Manual
Lash, Steven	2945	05/10/2014 22:47:07	05/13/2014 13:52:05	946.00	Manual
Lash, Steven	2997	05/10/2014 14:44:08	05/13/2014 13:52:09	676.25	Manual
				$11,392.80	

Deposits By Collector

Road Information
Interchange: 05 019 HES

Reporting Period
05/10/2014

05 019 HES

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2060	05/10/2014 21:50:19	05/13/2014 13:52:49	$3,962.95	Manual
Lash, Steven	2122	05/10/2014 22:52:26	05/13/2014 13:52:53	3,112.75	Manual
Lash, Steven	2177	05/10/2014 14:50:28	05/13/2014 13:52:57	6,175.40	Manual
Lash, Steven	2190	05/10/2014 06:53:34	05/13/2014 13:53:02	631.50	Manual
Lash, Steven	2194	05/10/2014 14:48:25	05/13/2014 13:53:06	3,350.75	Manual
Lash, Steven	2306	05/10/2014 22:51:54	05/13/2014 13:53:11	5,373.95	Manual
Lash, Steven	2453	05/10/2014 06:54:13	05/13/2014 13:53:17	2,340.00	Manual
Lash, Steven	2892	05/10/2014 14:51:20	05/13/2014 13:53:21	3,825.05	Manual
				$28,772.35	

Deposits By Collector

Road Information
Interchange: 05 020 LEL

Reporting Period
05/10/2014

05 020 LEL

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2104	05/10/2014 14:47:03	05/13/2014 13:53:26	$2,978.05	Manual
Lash, Steven	2147	05/10/2014 22:52:56	05/13/2014 13:53:30	1,718.10	Manual
Lash, Steven	2548	05/10/2014 06:50:10	05/13/2014 13:53:34	822.80	Manual
Lash, Steven	2672	05/10/2014 22:50:11	05/13/2014 13:53:38	2,537.20	Manual
Lash, Steven	3141	05/10/2014 14:50:27	05/13/2014 13:53:44	2,845.85	Manual
				$10,902.00	

Deposits By Collector

Road Information
Interchange: 05 021 RDG

Reporting Period
05/10/2014

05 021 RDG

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2003	05/10/2014 22:06:21	05/14/2014 12:32:26	$3,047.33	Manual
Lash, Steven	2090	05/10/2014 06:53:28	05/13/2014 13:53:56	1,415.85	Manual
Lash, Steven	2275	05/10/2014 22:52:22	05/13/2014 13:53:59	3,073.00	Manual
Lash, Steven	2330	05/10/2014 14:49:33	05/13/2014 13:54:04	2,949.65	Manual
Lash, Steven	2679	05/10/2014 14:54:56	05/13/2014 13:54:08	3,300.65	Manual
Lash, Steven	3023	05/10/2014 14:50:05	05/13/2014 13:54:14	2,301.30	Manual
Lash, Steven	3178	05/10/2014 23:47:32	05/13/2014 13:54:18	3,050.75	Manual
				$19,138.53	

Deposits By Collector

Road Information
Interchange: 05 022 MGT

Reporting Period
05/10/2014

05 022 MGT

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2265	05/10/2014 14:45:58	05/13/2014 13:54:22	$2,534.00	Manual
Lash, Steven	2704	05/10/2014 14:14:26	05/13/2014 13:54:26	908.00	Manual
Lash, Steven	2725	05/10/2014 06:53:24	05/13/2014 13:54:30	719.15	Manual
Lash, Steven	2755	05/10/2014 23:50:18	05/13/2014 13:54:34	2,714.00	Manual
Lash, Steven	2801	05/10/2014 21:09:02	05/13/2014 13:54:38	765.70	Manual
Lash, Steven	2833	05/10/2014 14:52:08	05/13/2014 13:54:42	1,857.10	Manual
Lash, Steven	3129	05/10/2014 22:51:27	05/13/2014 13:54:47	1,977.00	Manual
				$11,474.95	

Deposits By Collector

Road Information
Interchange: 05 023 DWT

Reporting Period
05/10/2014

05 023 DWT

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2022	05/10/2014 14:53:54	05/13/2014 13:54:50	$2,330.00	Manual
Lash, Steven	2100	05/10/2014 22:48:39	05/13/2014 13:54:55	2,921.20	Manual
Lash, Steven	2142	05/10/2014 14:52:09	05/13/2014 13:55:00	2,814.85	Manual
Lash, Steven	2158	05/10/2014 22:13:19	05/14/2014 12:32:56	2,604.60	Manual
Lash, Steven	2571	05/10/2014 14:12:36	05/13/2014 13:55:08	1,708.30	Manual
Lash, Steven	2886	05/10/2014 06:42:25	05/13/2014 13:55:11	1,253.00	Manual
Lash, Steven	2982	05/10/2014 23:56:18	05/14/2014 12:31:54	1,918.00	Manual
				$15,549.95	

Deposits By Collector

Road Information
Interchange: 05 024 VAF

Reporting Period
05/10/2014

05 024 VAF

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2061	05/10/2014 12:32:08	05/13/2014 14:16:57	$1,552.20	Manual
Lash, Steven	2061	05/10/2014 21:40:12	05/13/2014 14:17:03	3,325.44	Manual
Lash, Steven	2079	05/10/2014 13:15:09	05/13/2014 14:17:11	3,051.35	Manual
Lash, Steven	2079	05/10/2014 21:36:50	05/15/2014 08:49:12	4,060.96	Manual
Lash, Steven	2140	05/10/2014 05:50:25	05/15/2014 08:48:32	2,751.00	Manual
Lash, Steven	2149	05/10/2014 05:30:00	05/13/2014 14:17:39	946.05	Manual
Lash, Steven	2149	05/10/2014 21:03:37	05/13/2014 14:17:45	4,938.35	Manual
Lash, Steven	2236	05/10/2014 21:41:17	05/13/2014 14:17:50	6,907.95	Manual
Lash, Steven	2361	05/10/2014 13:35:10	05/13/2014 14:17:54	3,784.00	Manual
Lash, Steven	2387	05/10/2014 13:39:19	05/13/2014 14:17:58	3,270.70	Manual
Lash, Steven	2664	05/10/2014 21:53:52	05/13/2014 14:18:02	2,920.90	Manual
Lash, Steven	2726	05/10/2014 13:49:58	05/13/2014 14:18:10	4,037.60	Manual
Lash, Steven	2778	05/10/2014 05:50:14	05/13/2014 14:18:14	4,313.00	Manual
Lash, Steven	2991	05/10/2014 19:29:56	05/13/2014 14:18:21	5,823.00	Manual
Lash, Steven	3134	05/10/2014 21:00:58	05/13/2014 14:18:29	4,346.05	Manual
Lash, Steven	3145	05/10/2014 13:37:20	05/13/2014 14:18:33	3,036.85	Manual
				$59,065.40	

Deposits By Collector

Road Information
Interchange: 05 025 NOR

Reporting Period
05/10/2014

05 025 NOR

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2346	05/10/2014 13:33:38	05/13/2014 14:18:38	$1,412.90	Manual
Lash, Steven	2378	05/10/2014 12:31:06	05/13/2014 14:18:47	1,232.70	Manual
Lash, Steven	2378	05/10/2014 21:36:21	05/13/2014 14:18:51	2,558.95	Manual
Lash, Steven	2878	05/10/2014 05:40:02	05/13/2014 14:18:59	730.45	Manual
Lash, Steven	2878	05/10/2014 21:03:23	05/13/2014 14:19:06	1,180.35	Manual
Lash, Steven	2946	05/10/2014 05:33:36	05/13/2014 14:19:13	477.65	Manual
Lash, Steven	2946	05/10/2014 10:50:03	05/13/2014 14:19:19	694.85	Manual
Lash, Steven	3046	05/10/2014 21:32:27	05/13/2014 14:19:23	2,053.40	Manual
				$10,341.25	

Deposits By Collector

Road Information
Interchange: 05 026 FOW

Reporting Period
05/10/2014

05 026 FOW

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2065	05/10/2014 21:47:37	05/13/2014 10:39:29	$3,241.00	Manual
Lash, Steven	2422	05/10/2014 21:04:26	05/13/2014 10:39:34	2,174.55	Manual
Lash, Steven	2598	05/10/2014 13:41:36	05/13/2014 10:39:40	1,288.25	Manual
Lash, Steven	2620	05/10/2014 21:40:14	05/13/2014 10:39:45	2,455.25	Manual
Lash, Steven	2841	05/10/2014 13:08:06	05/13/2014 10:39:50	1,484.00	Manual
Lash, Steven	2855	05/10/2014 05:51:01	05/13/2014 10:39:57	1,525.85	Manual
Lash, Steven	2931	05/10/2014 13:38:13	05/13/2014 10:40:06	2,591.60	Manual
Lash, Steven	2937	05/10/2014 13:49:57	05/15/2014 08:51:37	1,793.75	Manual
Lash, Steven	3172	05/10/2014 21:32:09	05/13/2014 10:40:17	2,599.70	Manual
Lash, Steven	3191	05/10/2014 05:55:32	05/13/2014 10:40:21	1,089.25	Manual
				$20,243.20	

Deposits By Collector

Road Information
Interchange: 05 027 WIG

Reporting Period
05/10/2014

05 027 WIG

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2209	05/10/2014 13:33:42	05/13/2014 10:40:26	$1,664.15	Manual
Lash, Steven	2212	05/10/2014 05:44:33	05/13/2014 10:40:33	1,206.35	Manual
Lash, Steven	2424	05/10/2014 21:30:51	05/13/2014 10:40:37	2,716.75	Manual
Lash, Steven	2425	05/10/2014 05:44:43	05/13/2014 10:40:42	1,072.40	Manual
Lash, Steven	2492	05/10/2014 21:02:49	05/13/2014 10:40:46	1,817.00	Manual
Lash, Steven	2662	05/10/2014 13:42:08	05/13/2014 10:40:51	2,068.15	Manual
Lash, Steven	2819	05/10/2014 13:00:32	05/13/2014 10:40:57	1,265.00	Manual
Lash, Steven	2924	05/10/2014 21:33:44	05/13/2014 10:41:04	2,530.30	Manual
Lash, Steven	3060	05/10/2014 21:42:48	05/13/2014 10:41:09	3,033.25	Manual
Lash, Steven	3097	05/10/2014 13:34:40	05/13/2014 10:41:13	1,745.50	Manual
				$19,118.85	

Deposits By Collector

Road Information
Interchange: 05 028 BEN

Reporting Period
05/10/2014

05 028 BEN

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2107	05/10/2014 21:47:55	05/13/2014 10:41:18	$3,621.10	Manual
Lash, Steven	2179	05/10/2014 21:02:50	05/15/2014 08:49:41	1,426.10	Manual
Lash, Steven	2230	05/10/2014 13:10:36	05/13/2014 10:41:30	2,042.15	Manual
Lash, Steven	2230	05/10/2014 21:36:17	05/13/2014 10:41:35	3,838.97	Manual
Lash, Steven	2266	05/10/2014 15:11:53	05/13/2014 10:41:43	3,453.90	Manual
Lash, Steven	2276	05/10/2014 21:39:41	05/13/2014 10:41:50	4,906.00	Manual
Lash, Steven	2304	05/10/2014 05:03:18	05/13/2014 10:41:57	2,257.20	Manual
Lash, Steven	2304	05/10/2014 13:36:06	05/13/2014 10:42:01	3,168.95	Manual
Lash, Steven	2307	05/10/2014 13:42:56	05/13/2014 10:42:06	2,346.45	Manual
Lash, Steven	2825	05/10/2014 00:52:47	05/13/2014 10:42:13	1,356.05	Manual
Lash, Steven	2825	05/10/2014 18:29:21	05/13/2014 10:42:17	742.00	Manual
Lash, Steven	2873	05/10/2014 05:37:27	05/13/2014 10:42:23	1,474.45	Manual
Lash, Steven	2873	05/10/2014 13:52:08	05/13/2014 10:42:28	1,222.75	Manual
Lash, Steven	2874	05/10/2014 21:40:45	05/13/2014 10:42:32	3,311.20	Manual
Lash, Steven	2900	05/10/2014 21:40:26	05/13/2014 10:42:36	2,316.00	Manual
				$37,483.27	

Deposits By Collector

Road Information
Interchange: 05 029 DEV

Reporting Period
05/10/2014

05 029 DEV

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2078	05/10/2014 21:40:12	05/13/2014 10:42:41	$1,743.00	Manual
Lash, Steven	2109	05/10/2014 21:38:21	05/13/2014 10:42:45	2,387.00	Manual
Lash, Steven	2317	05/10/2014 04:28:59	05/13/2014 10:42:51	386.95	Manual
Lash, Steven	2321	05/10/2014 05:33:54	05/13/2014 10:42:58	791.30	Manual
Lash, Steven	2435	05/10/2014 13:35:54	05/13/2014 10:43:03	1,146.35	Manual
Lash, Steven	2601	05/10/2014 13:34:20	05/13/2014 10:43:07	1,510.00	Manual
				$7,964.60	

Deposits By Collector

Road Information
Interchange: 05 030 DRB

Reporting Period
05/10/2014

05 030 DRB

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2025	05/10/2014 20:36:50	05/13/2014 10:43:14	$4,545.15	Manual
Lash, Steven	2029	05/10/2014 12:58:17	05/13/2014 10:43:26	2,958.50	Manual
Lash, Steven	2029	05/10/2014 21:40:06	05/15/2014 08:50:17	3,021.80	Manual
Lash, Steven	2066	05/10/2014 13:40:08	05/13/2014 10:43:34	497.85	Manual
Lash, Steven	2224	05/10/2014 05:40:10	05/13/2014 10:43:41	2,212.70	Manual
Lash, Steven	2237	05/10/2014 05:51:56	05/13/2014 10:43:45	1,721.45	Manual
Lash, Steven	2408	05/10/2014 00:02:07	05/13/2014 10:43:55	301.00	Manual
Lash, Steven	2749	05/10/2014 13:46:14	05/15/2014 08:52:19	2,940.40	Manual
Lash, Steven	2794	05/10/2014 12:39:33	05/13/2014 10:44:11	3,636.45	Manual
Lash, Steven	2794	05/10/2014 21:33:10	05/13/2014 10:44:17	4,178.65	Manual
Lash, Steven	2913	05/10/2014 13:36:38	05/13/2014 10:44:21	2,670.00	Manual
Lash, Steven	3168	05/10/2014 21:47:48	05/13/2014 10:44:28	3,110.05	Manual
				$31,794.00	

Deposits By Collector

Road Information
Interchange: 05 042 WRN

Reporting Period
05/10/2014

05 042 WRN

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2002	05/10/2014 06:54:17	05/13/2014 09:48:43	$4,171.25	Manual
Lash, Steven	2024	05/10/2014 22:45:59	05/13/2014 09:48:47	4,320.20	Manual
Lash, Steven	2031	05/10/2014 06:38:54	05/13/2014 09:49:01	3,693.20	Manual
Lash, Steven	2046	05/10/2014 22:30:38	05/13/2014 09:49:05	3,369.85	Manual
Lash, Steven	2051	05/10/2014 14:50:48	05/13/2014 09:49:09	6,007.00	Manual
Lash, Steven	2064	05/10/2014 14:49:02	05/21/2014 12:45:23	4,986.45	Manual
Lash, Steven	2235	05/10/2014 22:40:20	05/13/2014 09:49:18	4,827.15	Manual
Lash, Steven	2308	05/10/2014 22:46:37	05/21/2014 12:45:58	6,605.25	Manual
Lash, Steven	2399	05/10/2014 22:28:10	05/13/2014 09:49:27	611.75	Manual
Lash, Steven	2409	05/10/2014 04:33:07	05/13/2014 09:49:31	783.55	Manual
Lash, Steven	2511	05/10/2014 14:03:07	05/13/2014 09:49:35	860.70	Manual
Lash, Steven	2519	05/10/2014 14:46:28	05/13/2014 09:49:42	3,110.54	Manual
Lash, Steven	2519	05/10/2014 22:46:38	05/21/2014 12:46:37	5,092.65	Manual
Lash, Steven	2708	05/10/2014 14:44:32	05/13/2014 09:49:50	4,314.10	Manual
Lash, Steven	3039	05/10/2014 14:49:46	05/13/2014 09:49:55	5,531.44	Manual
				$58,285.08	

Deposits By Collector

Road Information
Interchange: 06 031 LAN

Reporting Period
05/10/2014

06 031 LAN

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2068	05/10/2014 14:25:07	05/13/2014 11:06:50	$1,511.95	Manual
Lash, Steven	2068	05/10/2014 22:50:10	05/13/2014 11:06:56	1,820.75	Manual
Lash, Steven	2120	05/10/2014 09:59:47	05/13/2014 11:07:02	233.20	Manual
Lash, Steven	2120	05/10/2014 22:50:39	05/13/2014 11:07:06	1,544.90	Manual
Lash, Steven	2146	05/10/2014 19:06:29	05/13/2014 11:07:10	1,629.45	Manual
Lash, Steven	2252	05/10/2014 06:51:06	05/13/2014 11:07:14	281.35	Manual
Lash, Steven	2363	05/10/2014 14:43:28	05/13/2014 11:07:21	1,305.80	Manual
Lash, Steven	2363	05/10/2014 21:00:33	05/13/2014 11:07:25	356.00	Manual
Lash, Steven	3059	05/10/2014 06:45:52	05/13/2014 11:07:29	476.40	Manual
				$9,159.80	

Deposits By Collector

Road Information
Interchange: 06 032 QUA

Reporting Period
05/10/2014

06 032 QUA

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2020	05/10/2014 22:20:47	05/13/2014 11:07:33	$2,099.00	Manual
Lash, Steven	2072	05/10/2014 22:48:20	05/13/2014 11:07:38	1,894.35	Manual
Lash, Steven	2201	05/10/2014 14:49:08	05/13/2014 11:07:42	1,990.30	Manual
Lash, Steven	2444	05/10/2014 12:48:51	05/13/2014 11:07:46	1,334.00	Manual
Lash, Steven	2470	05/10/2014 19:40:06	05/13/2014 11:07:51	2,012.05	Manual
Lash, Steven	3094	05/10/2014 06:50:31	05/13/2014 11:07:55	897.00	Manual
				$10,226.70	

Deposits By Collector

Road Information
Interchange: 06 033 LEV

Reporting Period
05/10/2014

06 033 LEV

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2008	05/10/2014 06:49:28	05/13/2014 11:07:59	$1,552.20	Manual
Lash, Steven	2125	05/10/2014 14:49:47	05/13/2014 11:08:03	3,832.50	Manual
Lash, Steven	2166	05/10/2014 22:35:09	05/13/2014 11:08:07	3,172.20	Manual
Lash, Steven	2352	05/10/2014 22:31:36	05/15/2014 14:35:00	2,695.21	Manual
Lash, Steven	2690	05/10/2014 14:47:18	05/13/2014 11:08:18	3,305.65	Manual
Lash, Steven	2939	05/10/2014 14:46:24	05/13/2014 11:08:26	3,722.75	Manual
Lash, Steven	3087	05/10/2014 06:48:09	05/13/2014 11:08:34	1,273.40	Manual
Lash, Steven	3183	05/10/2014 22:45:21	05/13/2014 11:08:38	2,968.00	Manual
Lash, Steven	3186	05/10/2014 22:45:44	05/13/2014 11:08:46	2,417.95	Manual
Lash, Steven	8277	05/10/2014 14:46:10	05/14/2014 11:38:27	3,017.80	Manual
				$27,957.66	

Deposits By Collector

Road Information
Interchange: 06 034 MAV

Reporting Period
05/10/2014

06 034 MAV

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2268	05/10/2014 14:06:44	05/13/2014 11:11:44	$1,068.45	Manual
Lash, Steven	2588	05/10/2014 18:51:31	05/13/2014 11:11:48	1,387.00	Manual
Lash, Steven	2610	05/10/2014 07:01:15	05/13/2014 11:11:54	683.00	Manual
Lash, Steven	2610	05/10/2014 14:48:01	05/13/2014 11:11:58	1,467.10	Manual
Lash, Steven	2681	05/10/2014 22:46:36	05/13/2014 11:12:03	1,625.35	Manual
Lash, Steven	3078	05/10/2014 22:16:12	05/13/2014 11:12:07	1,194.45	Manual
				$7,425.35	

Deposits By Collector

Road Information
Interchange: 06 035 POC

Reporting Period
05/10/2014

06 035 POC

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2134	05/10/2014 06:49:52	05/13/2014 11:12:11	$1,767.00	Manual
Lash, Steven	2232	05/10/2014 18:33:48	05/13/2014 11:12:15	2,079.20	Manual
Lash, Steven	2261	05/10/2014 14:53:40	05/13/2014 11:12:20	4,678.70	Manual
Lash, Steven	2776	05/10/2014 14:17:42	05/13/2014 11:12:27	2,695.95	Manual
Lash, Steven	2836	05/10/2014 22:45:54	05/13/2014 11:12:31	1,326.00	Manual
Lash, Steven	2975	05/10/2014 22:50:10	05/13/2014 11:12:35	3,083.20	Manual
				$15,630.05	

Deposits By Collector

Road Information
Interchange: 06 036 WIB

Reporting Period
05/10/2014

06 036 WIB

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2362	05/10/2014 22:45:19	05/13/2014 11:12:52	$1,700.00	Manual
Lash, Steven	2437	05/10/2014 14:44:46	05/13/2014 11:12:56	990.00	Manual
Lash, Steven	2498	05/10/2014 14:16:44	05/13/2014 11:13:01	1,273.65	Manual
Lash, Steven	2832	05/10/2014 14:45:02	05/13/2014 11:13:06	1,338.55	Manual
Lash, Steven	2867	05/10/2014 06:41:53	05/13/2014 11:13:10	812.70	Manual
Lash, Steven	3003	05/10/2014 22:45:18	05/13/2014 11:13:15	2,598.19	Manual
				$8,713.09	

Deposits By Collector

Road Information
Interchange: 06 037 WYV

Reporting Period
05/10/2014

06 037 WYV

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2052	05/10/2014 06:50:44	05/13/2014 11:13:21	$1,668.70	Manual
Lash, Steven	2052	05/10/2014 14:42:18	05/13/2014 11:13:26	1,771.70	Manual
Lash, Steven	2164	05/10/2014 22:41:56	05/13/2014 11:13:31	3,686.00	Manual
Lash, Steven	2329	05/10/2014 14:46:56	05/13/2014 11:13:37	3,653.30	Manual
Lash, Steven	2368	05/10/2014 22:26:55	05/13/2014 11:13:41	1,661.20	Manual
Lash, Steven	2383	05/10/2014 14:36:11	05/13/2014 11:13:45	1,744.05	Manual
Lash, Steven	3124	05/10/2014 21:59:24	05/13/2014 11:13:49	1,888.00	Manual
				$16,072.95	

Deposits By Collector

Road Information
Interchange: 06 039 MIC

Reporting Period
05/10/2014

06 039 MIC

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2151	05/10/2014 21:48:45	05/13/2014 14:19:33	$4,055.35	Manual
Lash, Steven	2216	05/10/2014 13:31:12	05/13/2014 14:19:37	3,354.00	Manual
Lash, Steven	2222	05/10/2014 20:59:11	05/13/2014 14:19:41	2,588.85	Manual
Lash, Steven	2277	05/10/2014 21:39:27	05/13/2014 14:19:45	3,193.70	Manual
Lash, Steven	2286	05/10/2014 00:03:28	05/13/2014 14:19:52	1,062.81	Manual
Lash, Steven	2286	05/10/2014 21:46:38	05/13/2014 14:19:57	3,379.25	Manual
Lash, Steven	2348	05/10/2014 05:50:43	05/13/2014 14:20:06	2,030.61	Manual
Lash, Steven	2348	05/10/2014 13:38:26	05/13/2014 14:20:31	3,266.63	Manual
Lash, Steven	2373	05/10/2014 12:33:57	05/13/2014 14:20:39	1,235.00	Manual
Lash, Steven	2382	05/10/2014 21:47:44	05/13/2014 14:20:43	4,297.90	Manual
Lash, Steven	2556	05/10/2014 13:02:20	05/13/2014 14:20:51	2,039.35	Manual
Lash, Steven	2556	05/10/2014 20:30:35	05/13/2014 14:20:55	1,298.35	Manual
Lash, Steven	2728	05/10/2014 13:47:39	05/13/2014 14:21:00	2,831.40	Manual
Lash, Steven	2947	05/10/2014 21:45:03	05/13/2014 14:21:04	2,989.90	Manual
Lash, Steven	3143	05/10/2014 13:34:41	05/13/2014 14:21:08	1,867.30	Manual
Lash, Steven	3174	05/10/2014 05:38:43	05/13/2014 14:21:17	2,235.94	Manual
Lash, Steven	3174	05/10/2014 13:38:49	05/13/2014 14:21:24	3,641.70	Manual
				$45,368.04	

Deposits By Collector

Road Information
Interchange: 07 135 GTY

Reporting Period
05/10/2014

07 135 GTY

User Name	Collector Number	Deposit Date	Inserted Date	Deposit	Deposit Type
Lash, Steven	2129	05/10/2014 06:43:24	05/12/2014 13:12:07	$1,159.25	Manual
Lash, Steven	2156	05/10/2014 22:40:04	05/12/2014 13:12:16	3,158.25	Manual
Lash, Steven	2207	05/10/2014 14:46:35	05/12/2014 13:12:20	4,416.25	Manual
Lash, Steven	2214	05/10/2014 06:44:34	05/12/2014 13:12:25	1,929.95	Manual
Lash, Steven	2309	05/10/2014 22:02:10	05/12/2014 13:12:29	1,682.45	Manual
Lash, Steven	2371	05/10/2014 14:45:13	05/12/2014 13:12:34	4,312.85	Manual
Lash, Steven	2416	05/10/2014 18:30:03	05/12/2014 13:12:38	3,650.00	Manual
Lash, Steven	2634	05/10/2014 14:03:06	05/12/2014 13:12:44	2,506.80	Manual
Lash, Steven	2965	05/10/2014 22:46:25	05/12/2014 13:12:49	3,729.15	Manual
Lash, Steven	2979	05/10/2014 22:39:08	05/12/2014 13:12:54	3,276.45	Manual
Lash, Steven	3108	05/10/2014 14:47:05	05/12/2014 13:13:06	5,025.80	Manual
				$34,847.20	

~ End of Report ~

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3832	CASH	05/10/2014 14:50:54	1	2	286	2	05/10/2014	3244	1	2	1	2	$4.00	$0.00			
Original	8	Ticket	3833	CASH	05/10/2014 14:51:15	1	2	312	3	05/10/2014	320	1	2	1	2	6.45	0.00			
Original	8	Ticket	3834	CASH	05/10/2014 14:51:39	1	2	110	1	05/10/2014	5132	1	2	1	2	15.40	0.00			
Original	8	Ticket	3835	CASH	05/10/2014 14:52:05	1	2	242	1	05/10/2014	363	1	2	1	2	1.60	0.00			
Original	8	Ticket	3836	CASH	05/10/2014 14:52:24	1	2	30	3	05/10/2014	986	1	2	1	2	24.60	0.00			
Original	8	Ticket	3837	CASH	05/10/2014 14:52:50	1	2	236	3	05/10/2014	6435	1	2	1	2	2.05	0.00			
Original	8	Ticket	3838	CASH	05/10/2014 14:53:06	1	2	312	3	05/10/2014	177	1	2	1	2	6.45	0.00			
Original	8	Ticket	3839	CASH	05/10/2014 14:53:34	1	2	236	3	05/10/2014	6439	1	2	1	2	2.05	0.00			
Original	8	Ticket	3840	CASH	05/10/2014 14:53:45	1	2	242	1	05/10/2014	369	1	2	1	2	1.60	0.00			72
Original	8	Ticket	3841	CASH	05/10/2014 14:54:05	1	2	226	2	05/10/2014	373	1	2	1	2	2.60	0.00			
Original	8	Ticket	3842	CASH	05/10/2014 14:54:41	1	2	286	3	05/10/2014	7112	1	2	1	2	4.00	0.00			
Original	8	Ticket	3843	CASH	05/10/2014 14:54:58	1	2	351	3	05/10/2014	4782	1	2	1	2	12.60	0.00			
Original	8	Ticket	3844	CASH	05/10/2014 14:56:31	1	2	326	6	05/10/2014	263	1	2	1	2	8.80	0.00			
Original	8	Ticket	3845	CASH	05/10/2014 14:56:53	1	2	326	5	05/10/2014	7946	1	2	1	2	8.80	0.00			72
Original	8	Ticket	3846	CASH	05/10/2014 14:57:15	1	2	326	5	05/10/2014	7833	1	2	1	2	8.80	0.00			
Original	8	Ticket	3847	CASH	05/10/2014 14:57:32	1	2	189	2	05/10/2014	1939	1	2	1	2	6.45	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3848	CASH	05/10/2014 14:57:54	1	2	333	5	05/10/2014	1921	1	2	1	2	$9.70	$0.00			
Original	8	Ticket	3849	CASH	05/10/2014 14:58:16	1	2	242	3	05/10/2014	8876	1	2	1	2	1.60	0.00			
Original	8	Ticket	3850	CASH	05/10/2014 14:58:34	1	2	326	5	05/10/2014	7880	1	2	1	2	8.80	0.00			
Original	8	Ticket	3851	CASH	05/10/2014 14:58:58	1	2	326	5	05/10/2014	7730	1	2	1	2	8.80	0.00			
Original	8	Ticket	3852	CASH	05/10/2014 14:59:20	1	2	91	1	05/10/2014	1188	1	2	1	2	17.45	0.00			
Original	8	Ticket	3853	CASH	05/10/2014 14:59:38	1	2	242	1	05/10/2014	381	1	2	1	2	1.60	0.00			
Original	8	Ticket	3854	CASH	05/10/2014 15:00:04	1	2	359	4	05/10/2014	2257	1	2	1	2	14.10	0.00			40
Original	8	Ticket	3855	CASH	05/10/2014 15:00:29	1	2	351	3	05/10/2014	4842	1	2	1	2	12.60	0.00			
Original	8	Ticket	3856	CASH	05/10/2014 15:01:01	1	2	242	1	05/10/2014	390	1	2	1	2	1.60	0.00			
Original	8	Ticket	3857	CASH	05/10/2014 15:01:13	1	2	242	1	05/10/2014	389	1	2	1	2	1.60	0.00			
Original	8	Ticket	3858	CASH	05/10/2014 15:01:25	1	2	57	3	05/10/2014	6235	1	2	1	2	21.30	0.00			
Original	8	Ticket	3859	CASH	05/10/2014 15:01:42	1	2	326	5	05/10/2014	7996	1	2	1	2	8.80	0.00			
Original	8	Ticket	3860	CASH	05/10/2014 15:02:00	1	2	359	4	05/10/2014	2251	1	2	1	2	14.10	0.00			
Original	8	Ticket	3861	CASH	05/10/2014 15:02:29	1	2	312	1	05/10/2014	6011	1	2	1	2	6.45	0.00			72
Original	8	Ticket	3862	CASH	05/10/2014 15:03:04	1	2	326	5	05/10/2014	7869	1	2	1	2	8.80	0.00			
Original	8	Ticket	3863	CASH	05/10/2014 15:03:27	1	2	326	3	05/10/2014	2419	1	2	1	2	8.80	0.00			
Original	8	Ticket	3864	CASH	05/10/2014 15:03:52	1	2	236	1	05/10/2014	720	1	2	1	2	2.05	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3865	CASH	05/10/2014 15:04:31	1	2	339	1	05/10/2014	1357	1	2	1	2	$10.75	$0.00			
Original	8	Ticket	3866	CASH	05/10/2014 15:04:59	1	2	146	1	05/10/2014	6961	1	2	1	2	11.20	0.00			
Original	8	Ticket	3867	CASH	05/10/2014 15:05:22	1	2	326	5	05/10/2014	7837	1	2	1	2	8.80	0.00			126
Original	8	Ticket	3868	CASH	05/10/2014 15:06:16	1	2	236	3	05/10/2014	6458	1	2	1	2	2.05	0.00			
Original	8	Ticket	3869	CASH	05/10/2014 15:06:44	1	2	266	1	05/10/2014	3653	1	2	1	2	2.60	0.00			
Original	8	Ticket	3870	CASH	05/10/2014 15:07:11	1	2	326	5	05/10/2014	7949	1	2	1	2	8.80	0.00			
Original	8	Ticket	3871	CASH	05/10/2014 15:07:38	3	2	242	1	05/10/2014	408	3	2	2	2	1.60	0.00			24 72
Original	8	Ticket	3872	CASH	05/10/2014 15:08:11	1	2	326	5	05/10/2014	8058	1	2	1	2	8.80	0.00			
Original	8	Ticket	3873	CASH	05/10/2014 15:08:43	1	2	57	3	05/10/2014	5950	1	2	1	2	21.30	0.00			
Original	8	Ticket	3874	CASH	05/10/2014 15:08:57	1	2	242	1	05/10/2014	416	1	2	1	2	1.60	0.00			
Original	8	Ticket	3875	CASH	05/10/2014 15:09:24	1	2	236	3	05/10/2014	6464	1	2	1	2	2.05	0.00			
Original	8	Ticket	3876	CASH	05/10/2014 15:09:41	1	2	312	1	05/10/2014	5977	1	2	1	2	6.45	0.00			
Original	8	Ticket	3877	CASH	05/10/2014 15:10:15	1	2	226	4	05/10/2014	3697	1	2	1	2	2.60	0.00			
Original	8	Ticket	3878	CASH	05/10/2014 15:10:36	1	2	326	5	05/10/2014	8051	1	2	1	2	8.80	0.00			
Original	8	Ticket	3879	CASH	05/10/2014 15:10:53	1	2	333	3	05/10/2014	7936	1	2	1	2	9.70	0.00			
Original	8	Ticket	3880	CASH	05/10/2014 15:12:31	1	2	236	3	05/10/2014	6469	1	2	1	2	2.05	0.00			72
Original	8	Ticket	3881	CASH	05/10/2014 15:12:56	1	2	326	5	05/10/2014	7894	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3882	CASH	05/10/2014 15:14:19	1	2	266	1	05/10/2014	3665	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	3883	ETC	05/10/2014 15:14:57			312	3	05/10/2014	0	0	0	1	2	0.00	0.00			72 81 82
Original	8	Ticket	3884	CASH	05/10/2014 15:15:14	1	2	236	1	05/10/2014	729	1	2	1	2	2.05	0.00			
Original	8	Ticket	3885	CASH	05/10/2014 15:15:42	1	2	226	4	05/10/2014	3709	1	2	1	2	2.60	0.00			
Original	8	Ticket	3886	CASH	05/10/2014 15:16:11	1	2	326	3	05/10/2014	2464	1	2	1	2	8.80	0.00			
Original	8	Ticket	3887	CASH	05/10/2014 15:16:33	1	2	326	5	05/10/2014	8091	1	2	1	2	8.80	0.00			
Original	8	Ticket	3888	CASH	05/10/2014 15:17:22	1	2	236	3	05/10/2014	6476	1	2	1	2	2.05	0.00			
Original	8	Ticket	3889	CASH	05/10/2014 15:17:42	1	2	242	1	05/10/2014	430	1	2	1	2	1.60	0.00			
Original	8	Ticket	3890	CASH	05/10/2014 15:17:59	1	2	189	2	05/10/2014	1949	1	2	1	2	6.45	0.00			
Original	8	Ticket	3891	CASH	05/10/2014 15:18:20	1	2	298	1	05/10/2014	4620	1	2	1	2	4.95	0.00			
Original	8	Ticket	3892	CASH	05/10/2014 15:18:39	1	2	359	4	05/10/2014	2310	1	2	1	2	14.10	0.00			
Original	8	Ticket	3893	CASH	05/10/2014 15:18:56	1	2	326	4	05/10/2014	2392	1	2	1	2	8.80	0.00			
Original	8	Ticket	3894	CASH	05/10/2014 15:19:27	1	2	326	5	05/10/2014	8124	1	2	1	2	8.80	0.00			
Original	8	Ticket	3895	CASH	05/10/2014 15:19:49	1	2	242	3	05/10/2014	8904	1	2	1	2	1.60	0.00			101
Original	8	Ticket	3896	CASH	05/10/2014 15:19:57	1	2	57	3	05/10/2014	6089	1	2	1	2	21.30	0.00			
Original	8	Ticket	3897	CASH	05/10/2014 15:20:37	1	2	266	1	05/10/2014	3668	1	2	1	2	2.60	0.00			
Original	8	Ticket	3898	CASH	05/10/2014 15:20:50	1	2	351	3	05/10/2014	4688	1	2	1	2	12.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3899	CASH	05/10/2014 15:21:17	1	2	326	5	05/10/2014	8026	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	3900	CASH	05/10/2014 15:22:06	1	2	326	5	05/10/2014	8102	1	2	1	2	8.80	0.00			
Original	8	Ticket	3901	CASH	05/10/2014 15:22:29	1	2	242	1	05/10/2014	444	1	2	1	2	1.60	0.00			
Original	8	Ticket	3902	CASH	05/10/2014 15:23:03	2	4	226	2	05/10/2014	425	2	4	2	4	4.00	0.00			
Original	8	Ticket	3903	CASH	05/10/2014 15:23:45	1	2	236	1	05/10/2014	734	1	2	1	2	2.05	0.00			
Original	8	Ticket	3904	CASH	05/10/2014 15:24:01	1	2	91	1	05/10/2014	1237	1	2	1	2	17.45	0.00			
Original	8	Ticket	3905	CASH	05/10/2014 15:24:25	1	2	312	1	05/10/2014	6075	1	2	1	2	6.45	0.00			
Original	8	Ticket	3906	CASH	05/10/2014 15:25:08	1	2	312	1	05/10/2014	6026	1	2	1	2	6.45	0.00			
Original	8	Ticket	3907	CASH	05/10/2014 15:25:27	1	2	57	3	05/10/2014	6553	1	2	1	2	21.30	0.00			
Original	8	Ticket	3908	CASH	05/10/2014 15:25:41	1	2	30	2	05/10/2014	589	1	2	1	2	24.60	0.00			72
Original	8	Ticket	3909	CASH	05/10/2014 15:26:06	1	2	201	2	05/10/2014	4208	1	2	1	2	4.95	0.00			
Original	8	Ticket	3910	CASH	05/10/2014 15:26:36	1	2	312	1	05/10/2014	6072	1	2	1	2	6.45	0.00			
Original	8	Ticket	3911	CASH	05/10/2014 15:27:10	1	2	286	3	05/10/2014	7249	1	2	1	2	4.00	0.00			
Original	8	Ticket	3912	CASH	05/10/2014 15:27:25	1	2	266	1	05/10/2014	3694	1	2	1	2	2.60	0.00			
Original	8	Ticket	3913	CASH	05/10/2014 15:27:45	1	2	242	3	05/10/2014	8913	1	2	1	2	1.60	0.00			
Original	8	Ticket	3914	CASH	05/10/2014 15:28:08	1	2	266	3	05/10/2014	2455	1	2	1	2	2.60	0.00			
Original	8	Ticket	3915	CASH	05/10/2014 15:28:28	1	2	286	3	05/10/2014	7255	1	2	1	2	4.00	0.00			126

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3916	CASH	05/10/2014 15:29:12	1	2	266	3	05/10/2014	2461	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	3917	CASH	05/10/2014 15:29:34	1	2	266	3	05/10/2014	2460	1	2	1	2	2.60	0.00			
Original	8	Ticket	3918	ETC	05/10/2014 15:30:22			236	3	05/10/2014	0	0	0	1	2	0.00	0.00			72 81 82 101
Original	8	Ticket	3919	CASH	05/10/2014 15:30:54	1	2	146	1	05/10/2014	7054	1	2	1	2	11.20	0.00			72 126
Original	8	Ticket	3920	CASH	05/10/2014 15:31:36	1	2	146	2	05/10/2014	7593	1	2	1	2	11.20	0.00			
Original	8	Ticket	3921	CASH	05/10/2014 15:32:25	1	2	351	3	05/10/2014	4750	1	2	1	2	12.60	0.00			
Original	8	Ticket	3922	CASH	05/10/2014 15:32:55	1	2	326	5	05/10/2014	8160	1	2	1	2	8.80	0.00			
Original	8	Ticket	3923	CASH	05/10/2014 15:34:21	2	2	298	1	05/10/2014	4668	1	2	2	2	7.80	0.00			24
Original	8	Ticket	3924	CASH	05/10/2014 15:34:50	1	2	242	1	05/10/2014	476	1	2	1	2	1.60	0.00			
Original	8	Ticket	3925	CASH	05/10/2014 15:35:07	1	2	236	1	05/10/2014	743	1	2	1	2	2.05	0.00			
Original	8	Ticket	3926	CASH	05/10/2014 15:35:20	1	2	326	5	05/10/2014	8203	1	2	1	2	8.80	0.00			
Original	8	Ticket	3927	CASH	05/10/2014 15:35:40	1	2	286	3	05/10/2014	7276	1	2	1	2	4.00	0.00			
Original	8	Ticket	3928	CASH	05/10/2014 15:35:59	1	2	236	3	05/10/2014	6510	1	2	1	2	2.05	0.00			
Original	8	Ticket	3929	CASH	05/10/2014 15:36:12	1	2	91	1	05/10/2014	1260	1	2	1	2	17.45	0.00			
Original	8	Ticket	3930	CASH	05/10/2014 15:37:02	1	2	242	1	05/10/2014	479	1	2	1	2	1.60	0.00			
Original	8	Ticket	3931	CASH	05/10/2014 15:37:21	1	2	236	1	05/10/2014	747	1	2	1	2	2.05	0.00			
Original	8	Ticket	3932	CASH	05/10/2014 15:37:54	1	2	57	3	05/10/2014	6533	1	2	1	2	21.30	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3933	CASH	05/10/2014 15:38:13	1	2	326	5	05/10/2014	8141	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	3934	CASH	05/10/2014 15:38:35	1	2	351	3	05/10/2014	4976	1	2	1	2	12.60	0.00			
Original	8	Ticket	3935	CASH	05/10/2014 15:39:06	1	2	326	5	05/10/2014	8078	1	2	1	2	8.80	0.00			126
Original	8	Ticket	3936	CASH	05/10/2014 15:39:37	1	2	266	1	05/10/2014	3707	1	2	1	2	2.60	0.00			
Original	8	Ticket	3937	CASH	05/10/2014 15:39:58	1	2	226	1	05/10/2014	1357	1	2	1	2	2.60	0.00			
Original	8	Ticket	3938	CASH	05/10/2014 15:40:18	1	2	180	2	05/10/2014	6336	1	2	1	2	7.80	0.00			
Original	8	Ticket	3939	CASH	05/10/2014 15:40:45	1	2	326	5	05/10/2014	8176	1	2	1	2	8.80	0.00			
Original	8	Ticket	3940	CASH	05/10/2014 15:41:10	1	2	326	5	05/10/2014	8177	1	2	1	2	8.80	0.00			
Original	8	Ticket	3941	CASH	05/10/2014 15:41:28	1	2	312	3	05/10/2014	435	1	2	1	2	6.45	0.00			
Original	8	Ticket	3942	CASH	05/10/2014 15:41:48	1	2	339	4	05/10/2014	6789	1	2	1	2	10.75	0.00			
Original	8	Ticket	3943	CASH	05/10/2014 15:42:11	1	2	326	5	05/10/2014	8154	1	2	1	2	8.80	0.00			
Original	8	Ticket	3944	CASH	05/10/2014 15:42:40	1	2	91	1	05/10/2014	1302	1	2	1	2	17.45	0.00			
Original	8	Ticket	3945	CASH	05/10/2014 15:43:16	1	2	266	3	05/10/2014	2495	1	2	1	2	2.60	0.00			
Original	8	Ticket	3946	CASH	05/10/2014 15:43:49	1	2	247	1	05/10/2014	1053	1	2	1	2	0.00	0.00			53
Original	8	Ticket	3947	CASH	05/10/2014 15:44:03	1	2	236	3	05/10/2014	6524	1	2	1	2	2.05	0.00			
Original	8	Ticket	3948	CASH	05/10/2014 15:44:28	1	2	326	5	05/10/2014	8213	1	2	1	2	8.80	0.00			
Original	8	Ticket	3949	CASH	05/10/2014 15:44:52	1	2	333	5	05/10/2014	1967	1	2	1	2	9.70	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3950	CASH	05/10/2014 15:45:07	1	2	351	1	05/10/2014	1856	1	2	1	2	$12.60	$0.00			
Original	8	Ticket	3951	CASH	05/10/2014 15:45:27	1	2	242	3	05/10/2014	8938	1	2	1	2	1.60	0.00			
Original	8	Ticket	3952	CASH	05/10/2014 15:45:55	1	2	236	3	05/10/2014	6527	1	2	1	2	2.05	0.00			
Original	8	Ticket	3953	CASH	05/10/2014 15:46:06	1	2	326	5	05/10/2014	7910	1	2	1	2	8.80	0.00			
Original	8	Ticket	3954	CASH	05/10/2014 15:46:22	1	2	312	1	05/10/2014	6135	1	2	1	2	6.45	0.00			
Original	8	Ticket	3955	CASH	05/10/2014 15:46:40	1	2	242	3	05/10/2014	8946	1	2	1	2	1.60	0.00			
Original	8	Ticket	3956	CASH	05/10/2014 15:47:17	1	2	242	3	05/10/2014	8945	1	2	1	2	1.60	0.00			
Original	8	Ticket	3957	CASH	05/10/2014 15:47:42	1	2	298	1	05/10/2014	4692	1	2	1	2	4.95	0.00			
Original	8	Ticket	3958	CASH	05/10/2014 15:48:12	1	2	146	1	05/10/2014	7111	1	2	1	2	11.20	0.00			126
Original	8	Ticket	3959	CASH	05/10/2014 15:48:54	1	2	242	1	05/10/2014	501	1	2	1	2	1.60	0.00			
Original	8	Ticket	3960	CASH	05/10/2014 15:49:10	1	2	326	5	05/10/2014	8261	1	2	1	2	8.80	0.00			
Original	8	Ticket	3961	CASH	05/10/2014 15:49:27	1	2	326	5	05/10/2014	8257	1	2	1	2	8.80	0.00			
Original	8	Ticket	3962	CASH	05/10/2014 15:49:49	1	2	312	1	05/10/2014	6101	1	2	1	2	6.45	0.00			
Original	8	Ticket	3963	CASH	05/10/2014 15:50:17	1	2	266	1	05/10/2014	3740	1	2	1	2	2.60	0.00			
Original	8	Ticket	3964	CASH	05/10/2014 15:50:38	1	2	286	3	05/10/2014	7300	1	2	1	2	4.00	0.00			
Original	8	Ticket	3965	CASH	05/10/2014 15:50:52	1	2	242	1	05/10/2014	506	1	2	1	2	1.60	0.00			
Original	8	Ticket	3966	CASH	05/10/2014 15:51:05	1	2	312	3	05/10/2014	463	1	2	1	2	6.45	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	3967	CASH	05/10/2014 15:51:31	1	2	351	5	05/10/2014	1422	1	2	1	2	$12.60	$0.00			
Original	8	Ticket	3968	CASH	05/10/2014 15:51:59	1	2	312	1	05/10/2014	6153	1	2	1	2	6.45	0.00			
Original	8	Ticket	3969	CASH	05/10/2014 15:52:20	1	2	312	1	05/10/2014	6154	1	2	1	2	6.45	0.00			
Original	8	Ticket	3970	CASH	05/10/2014 15:52:48	1	2	326	62	01/05/2014	6102	1	2	1	2	8.80	0.00			3 126
Original	8	Ticket	3971	CASH	05/10/2014 15:53:13	2	2	236	3	05/10/2014	6546	2	2	1	2	2.05	0.00			24
Original	8	Ticket	3972	CASH	05/10/2014 15:53:55	1	2	266	1	05/10/2014	3750	1	2	1	2	2.60	0.00			
Original	8	Ticket	3973	CASH	05/10/2014 15:54:53	1	2	236	1	05/10/2014	764	1	2	1	2	2.05	0.00			
Original	8	Ticket	3974	CASH	05/10/2014 15:55:25	1	2	236	3	05/10/2014	6548	1	2	1	2	2.05	0.00			
Original	8	Ticket	3975	CASH	05/10/2014 15:55:51	1	2	180	2	05/10/2014	6345	1	2	1	2	7.80	0.00			
Original	8	Ticket	3976	CASH	05/10/2014 15:56:12	1	2	201	2	05/10/2014	4229	1	2	1	2	4.95	0.00			
Original	8	Ticket	3977	CASH	05/10/2014 15:56:37	1	2	266	1	05/10/2014	3756	1	2	1	2	2.60	0.00			
Original	8	Ticket	4032	CASH	05/10/2014 16:18:23	1	2	242	1	05/10/2014	571	1	2	1	2	1.60	0.00			
Original	8	Ticket	4033	CASH	05/10/2014 16:18:39	1	2	326	5	05/10/2014	8368	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4034	CASH	05/10/2014 16:18:59	1	2	312	1	05/10/2014	6198	1	2	1	2	6.45	0.00			
Original	8	Ticket	4035	CASH	05/10/2014 16:19:29	1	2	146	2	05/10/2014	7752	1	2	1	2	11.20	0.00			
Original	8	Ticket	4036	CASH	05/10/2014 16:19:53	1	2	242	1	05/10/2014	570	1	2	1	2	1.60	0.00			
Original	8	Ticket	4037	CASH	05/10/2014 16:20:05	1	2	226	2	05/10/2014	535	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4038	CASH	05/10/2014 16:20:25	1	2	242	1	05/10/2014	573	1	2	1	2	$1.60	$0.00			138
Original	8	Ticket	4039	CASH	05/10/2014 16:20:49	1	2	326	5	05/10/2014	8378	1	2	1	2	8.80	0.00			
Original	8	Ticket	4040	CASH	05/10/2014 16:21:07	2	3	226	4	05/10/2014	3827	2	3	2	3	4.00	0.00			
Original	8	Ticket	4041	CASH	05/10/2014 16:21:25	1	2	312	3	05/10/2014	541	1	2	1	2	6.45	0.00			
Original	8	Ticket	4042	CASH	05/10/2014 16:21:46	1	2	236	3	05/10/2014	6601	1	2	1	2	2.05	0.00			
Original	8	Ticket	4043	CASH	05/10/2014 16:22:30	2	3	286	2	05/10/2014	3585	2	3	2	3	5.90	0.00			72
Original	8	Ticket	4044	CASH	05/10/2014 16:22:59	1	2	326	5	05/10/2014	8409	1	2	1	2	8.80	0.00			
Original	8	Ticket	4045	CASH	05/10/2014 16:23:17	1	2	351	3	05/10/2014	5202	1	2	1	2	12.60	0.00			
Original	8	Ticket	4046	CASH	05/10/2014 16:23:39	1	2	351	3	05/10/2014	5203	1	2	1	2	12.60	0.00			
Original	8	Ticket	4047	CASH	05/10/2014 16:24:04	1	2	226	2	05/10/2014	538	1	2	1	2	2.60	0.00			
Original	8	Ticket	4048	CASH	05/10/2014 16:24:17	1	2	146	2	05/10/2014	7768	1	2	1	2	11.20	0.00			
Original	8	Ticket	4049	CASH	05/10/2014 16:24:49	1	2	351	3	05/10/2014	5209	1	2	1	2	12.60	0.00			
Original	8	Ticket	4050	CASH	05/10/2014 16:25:37	1	2	351	3	05/10/2014	5189	1	2	1	2	12.60	0.00			
Original	8	Ticket	4051	CASH	05/10/2014 16:25:53	1	2	326	5	05/10/2014	8437	1	2	1	2	8.80	0.00			
Original	8	Ticket	4052	CASH	05/10/2014 16:26:14	1	2	242	3	05/10/2014	8999	1	2	1	2	1.60	0.00			
Original	8	Ticket	4053	CASH	05/10/2014 16:26:37	1	2	226	4	05/10/2014	3835	1	2	1	2	2.60	0.00			
Original	8	Ticket	4054	CASH	05/10/2014 16:27:04	1	2	242	1	05/10/2014	587	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4055	CASH	05/10/2014 16:27:18	1	2	242	1	05/10/2014	588	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4056	CASH	05/10/2014 16:27:27	1	2	242	1	05/10/2014	590	1	2	1	2	1.60	0.00			
Original	8	Ticket	4057	CASH	05/10/2014 16:27:48	1	2	226	2	05/10/2014	547	1	2	1	2	2.60	0.00			
Original	8	Ticket	4058	CASH	05/10/2014 16:28:14	1	2	75	4	05/10/2014	2310	1	2	1	2	19.35	0.00			72
Original	8	Ticket	4059	CASH	05/10/2014 16:28:48	1	2	326	5	05/10/2014	8308	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4060	CASH	05/10/2014 16:29:27	1	2	236	3	05/10/2014	6617	1	2	1	2	2.05	0.00			
Original	8	Ticket	4061	CASH	05/10/2014 16:29:48	1	2	326	5	05/10/2014	8428	1	2	1	2	8.80	0.00			
Original	8	Ticket	4062	CASH	05/10/2014 16:30:05	1	2	226	4	05/10/2014	3849	1	2	1	2	2.60	0.00			
Original	8	Ticket	4063	CASH	05/10/2014 16:30:40	1	2	242	1	05/10/2014	598	1	2	1	2	1.60	0.00			
Original	8	Ticket	4064	CASH	05/10/2014 16:31:22	1	2	326	5	05/10/2014	8549	1	2	1	2	8.80	0.00			
Original	8	Ticket	4065	CASH	05/10/2014 16:32:26	1	2	242	1	05/10/2014	602	1	2	1	2	1.60	0.00			
Original	8	Ticket	4066	CASH	05/10/2014 16:32:48	1	2	326	5	05/10/2014	8498	1	2	1	2	8.80	0.00			
Original	8	Ticket	4067	CASH	05/10/2014 16:33:47	1	2	326	1	05/10/2014	5280	1	2	1	2	8.80	0.00			
Original	8	Ticket	4068	CASH	05/10/2014 16:34:18	1	2	242	1	05/10/2014	606	1	2	1	2	1.60	0.00			
Original	8	Ticket	4069	CASH	05/10/2014 16:34:33	1	2	326	5	05/10/2014	8454	1	2	1	2	8.80	0.00			
Original	8	Ticket	4070	CASH	05/10/2014 16:35:03	1	2	236	1	05/10/2014	788	1	2	1	2	2.05	0.00			
Original	8	Ticket	4071	CASH	05/10/2014 16:35:25	1	2	226	4	05/10/2014	3869	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4072	CASH	05/10/2014 16:35:40	1	2	312	3	05/10/2014	569	1	2	1	2	$6.45	$0.00			72
Original	8	Ticket	4073	CASH	05/10/2014 16:36:25	1	2	339	1	05/10/2014	1794	1	2	1	2	10.75	0.00			
Original	8	Ticket	4074	CASH	05/10/2014 16:37:16	1	2	266	3	05/10/2014	2584	1	2	1	2	2.60	0.00			126
Original	8	Ticket	4075	CASH	05/10/2014 16:37:37	1	2	242	1	05/10/2014	613	1	2	1	2	1.60	0.00			
Original	8	Ticket	4076	CASH	05/10/2014 16:38:32	1	2	242	1	05/10/2014	618	1	2	1	2	1.60	0.00			
Original	8	Ticket	4077	CASH	05/10/2014 16:38:51	1	2	242	1	05/10/2014	619	1	2	1	2	1.60	0.00			72
Original	8	Ticket	4078	CASH	05/10/2014 16:39:16	1	2	326	5	05/10/2014	8417	1	2	1	2	8.80	0.00			
Original	8	Ticket	4079	CASH	05/10/2014 16:39:45	1	2	326	5	05/10/2014	8467	1	2	1	2	8.80	0.00			
Original	8	Ticket	4080	CASH	05/10/2014 16:40:10	1	2	351	1	05/10/2014	2087	1	2	1	2	12.60	0.00			
Original	8	Ticket	4081	CASH	05/10/2014 16:40:33	1	2	226	4	05/10/2014	3875	1	2	1	2	2.60	0.00			
Original	8	Ticket	4082	CASH	05/10/2014 16:40:58	1	2	286	2	05/10/2014	3657	1	2	1	2	4.00	0.00			
Original	8	Ticket	4083	CASH	05/10/2014 16:41:19	1	2	326	5	05/10/2014	8572	1	2	1	2	8.80	0.00			
Original	8	Ticket	4084	CASH	05/10/2014 16:41:58	1	2	242	1	05/10/2014	617	1	2	1	2	1.60	0.00			
Original	8	Ticket	4085	CASH	05/10/2014 16:42:25	1	2	339	1	05/10/2014	1777	1	2	1	2	10.75	0.00			
Original	8	Ticket	4086	CASH	05/10/2014 16:42:55	1	2	339	1	05/10/2014	1778	1	2	1	2	10.75	0.00			126
Original	8	Ticket	4087	NONR	05/10/2014 16:43:28	1	2	247	2	05/10/2014	1942	1	2	1	2	0.00		62000017275		53
Original	8	Ticket	4088	CASH	05/10/2014 16:43:51	1	2	266	3	05/10/2014	2592	1	2	1	2	2.60	0.00			72

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4089	CASH	05/10/2014 16:44:37	1	2	236	3	05/10/2014	6639	1	2	1	2	$2.05	$0.00			
Original	8	Ticket	4090	CASH	05/10/2014 16:45:13	1	2	242	1	05/10/2014	629	1	2	1	2	1.60	0.00			
Original	8	Ticket	4091	CASH	05/10/2014 16:45:34	1	2	226	2	05/10/2014	573	1	2	1	2	2.60	0.00			
Original	8	Ticket	4092	CASH	05/10/2014 16:45:47	1	2	312	1	05/10/2014	6242	1	2	1	2	6.45	0.00			
Original	8	Ticket	4093	CASH	05/10/2014 16:46:20	1	2	286	2	05/10/2014	3676	1	2	1	2	4.00	0.00			
Original	8	Ticket	4094	CASH	05/10/2014 16:46:56	1	2	75	4	05/10/2014	2226	1	2	1	2	19.35	0.00			
Original	8	Ticket	4095	CASH	05/10/2014 16:47:11	1	2	326	5	05/10/2014	8554	1	2	1	2	8.80	0.00			
Original	8	Ticket	4096	CASH	05/10/2014 16:47:27	1	2	226	1	05/10/2014	1438	1	2	1	2	2.60	0.00			
Original	8	Ticket	4097	CASH	05/10/2014 16:47:40	1	2	358	2	05/10/2014	3355	1	2	1	2	13.55	0.00			
Original	8	Ticket	4098	CASH	05/10/2014 16:48:04	2	4	266	3	05/10/2014	2594	2	3	2	4	3.55	0.00			
Original	8	Ticket	4099	CASH	05/10/2014 16:48:31	1	2	242	1	05/10/2014	638	1	2	1	2	1.60	0.00			
Original	8	Ticket	4100	CASH	05/10/2014 16:49:00	1	2	242	1	05/10/2014	641	1	2	1	2	1.60	0.00			
Original	8	Ticket	4101	CASH	05/10/2014 16:49:17	1	2	266	1	05/10/2014	3813	1	2	1	2	2.60	0.00			126
Original	8	Ticket	4102	CASH	05/10/2014 16:49:43	1	2	226	2	05/10/2014	584	1	2	1	2	2.60	0.00			
Original	8	Ticket	4103	CASH	05/10/2014 16:49:58	1	2	326	5	05/10/2014	8622	1	2	1	2	8.80	0.00			
Original	8	Ticket	4104	CASH	05/10/2014 16:50:15	1	2	31	2	05/10/2014	8732	1	2	1	2	11.20	0.00			
Original	8	Ticket	4105	CASH	05/10/2014 16:50:45	1	2	242	1	05/10/2014	652	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4106	CASH	05/10/2014 16:51:30	1	2	226	4	05/10/2014	3905	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	4107	CASH	05/10/2014 16:51:40	1	2	286	3	05/10/2014	7487	1	2	1	2	4.00	0.00			72 126
Original	8	Ticket	4108	CASH	05/10/2014 16:52:19	1	2	326	3	05/10/2014	2864	1	2	1	2	8.80	0.00			
Original	8	Ticket	4109	CASH	05/10/2014 16:52:38	1	2	242	1	05/10/2014	657	1	2	1	2	1.60	0.00			
Original	8	Ticket	4110	CASH	05/10/2014 16:52:55	1	2	298	1	05/10/2014	4813	1	2	1	2	4.95	0.00			
Original	8	Ticket	4111	CASH	05/10/2014 16:53:17	1	2	286	3	05/10/2014	7501	1	2	1	2	4.00	0.00			
Original	8	Ticket	4112	CASH	05/10/2014 16:53:38	1	2	351	1	05/10/2014	2124	1	2	1	2	12.60	0.00			72
Original	8	Ticket	4113	CASH	05/10/2014 16:54:03	1	2	226	2	05/10/2014	596	1	2	1	2	2.60	0.00			
Original	8	Ticket	4114	CASH	05/10/2014 16:54:24	1	2	286	2	05/10/2014	3737	1	2	1	2	4.00	0.00			
Original	8	Ticket	4115	CASH	05/10/2014 16:55:54	1	2	351	5	05/10/2014	1703	1	2	1	2	12.60	0.00			
Original	8	Ticket	4116	CASH	05/10/2014 16:56:20	1	2	226	4	05/10/2014	3918	1	2	1	2	2.60	0.00			72
Original	8	Ticket	4117	CASH	05/10/2014 16:56:44	1	2	236	3	05/10/2014	6666	1	2	1	2	2.05	0.00			
Original	8	Ticket	4118	CASH	05/10/2014 16:57:18	1	2	333	5	05/10/2014	2107	1	2	1	2	9.70	0.00			
Original	8	Ticket	4119	CASH	05/10/2014 16:57:41	1	2	146	2	05/10/2014	7824	1	2	1	2	11.20	0.00			
Original	8	Ticket	4120	CASH	05/10/2014 16:58:19	1	2	146	1	05/10/2014	7079	1	2	1	2	11.20	0.00			
Original	8	Ticket	4121	CASH	05/10/2014 16:59:21	1	2	30	1	05/10/2014	4701	1	2	1	2	24.60	0.00			72
Original	8	Ticket	4122	CASH	05/10/2014 17:00:10	1	2	75	4	05/10/2014	2340	1	2	1	2	19.35	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4123	CASH	05/10/2014 17:00:31	1	2	91	1	05/10/2014	1354	1	2	1	2	$17.45	$0.00			
Original	8	Ticket	4124	CASH	05/10/2014 17:00:51	1	2	226	2	05/10/2014	617	1	2	1	2	2.60	0.00			
Original	8	Ticket	4125	CASH	05/10/2014 17:02:03	1	2	226	4	05/10/2014	3916	1	2	1	2	2.60	0.00			
Original	8	Ticket	4126	CASH	05/10/2014 17:02:19	1	2	326	5	05/10/2014	8728	1	2	1	2	8.80	0.00			
Original	8	Ticket	4127	ETC	05/10/2014 17:02:37			266	2	05/10/2014	0	0	0	1	2	0.00	0.00			72 81 82
Original	8	Ticket	4128	CASH	05/10/2014 17:02:50	1	2	226	4	05/10/2014	3932	1	2	1	2	2.60	0.00			
Original	8	Ticket	4129	CASH	05/10/2014 17:03:10	1	2	286	3	05/10/2014	7471	1	2	1	2	4.00	0.00			
Original	8	Ticket	4130	CASH	05/10/2014 17:03:30	1	2	236	3	05/10/2014	6677	1	2	1	2	2.05	0.00			
Original	8	Ticket	4131	CASH	05/10/2014 17:03:43	1	2	242	1	05/10/2014	679	1	2	1	2	1.60	0.00			
Original	8	Ticket	4132	CASH	05/10/2014 17:04:11	2	2	298	1	05/10/2014	4862	2	2	1	2	7.80	0.00			24
Original	8	Ticket	4133	CASH	05/10/2014 17:04:36	1	2	57	3	05/10/2014	7199	1	2	1	2	21.30	0.00			
Original	8	Ticket	4134	CASH	05/10/2014 17:05:05	1	2	326	5	05/10/2014	8651	1	2	1	2	8.80	0.00			
Original	8	Ticket	4135	CASH	05/10/2014 17:05:53	1	2	326	3	05/10/2014	2901	1	2	1	2	8.80	0.00			
Original	8	Ticket	4136	CASH	05/10/2014 17:06:28	1	2	226	2	05/10/2014	624	1	2	1	2	2.60	0.00			
Original	8	Ticket	4137	CASH	05/10/2014 17:07:05	1	2	75	4	05/10/2014	2406	1	2	1	2	19.35	0.00			
Original	8	Ticket	4138	CASH	05/10/2014 17:07:44	1	2	312	1	05/10/2014	6342	1	2	1	2	6.45	0.00			
Original	8	Ticket	4139	CASH	05/10/2014 17:07:59	1	2	30	2	05/10/2014	871	1	2	1	2	24.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4140	CASH	05/10/2014 17:08:40	1	2	146	1	05/10/2014	7363	1	2	1	2	$11.20	$0.00			
Original	8	Ticket	4141	CASH	05/10/2014 17:09:07	1	2	236	3	05/10/2014	6690	1	2	1	2	2.05	0.00			
Original	8	Ticket	4142	CASH	05/10/2014 17:09:21	1	2	236	3	05/10/2014	6687	1	2	1	2	2.05	0.00			
Original	8	Ticket	4143	CASH	05/10/2014 17:09:31	1	2	30	1	05/10/2014	4656	1	2	1	2	24.60	0.00			
Original	8	Ticket	4144	CASH	05/10/2014 17:09:50	1	2	312	1	05/10/2014	6336	1	2	1	2	6.45	0.00			
Original	8	Ticket	4145	CASH	05/10/2014 17:10:10	1	2	359	4	05/10/2014	2719	1	2	1	2	14.10	0.00			
Original	8	Ticket	4146	CASH	05/10/2014 17:10:35	1	2	326	5	05/10/2014	8812	1	2	1	2	8.80	0.00			
Original	8	Ticket	4147	CASH	05/10/2014 17:10:59	1	2	146	2	05/10/2014	7953	1	2	1	2	11.20	0.00			
Original	8	Ticket	4148	CASH	05/10/2014 17:11:25	1	2	146	2	05/10/2014	7660	1	2	1	2	11.20	0.00			
Original	8	Ticket	4149	CASH	05/10/2014 17:11:56	1	2	286	3	05/10/2014	7531	1	2	1	2	4.00	0.00			
Original	8	Ticket	4150	CASH	05/10/2014 17:12:16	1	2	242	1	05/10/2014	695	1	2	1	2	1.60	0.00			
Original	8	Ticket	4151	CASH	05/10/2014 17:12:33	1	2	75	1	05/10/2014	124	1	2	1	2	19.35	0.00			
Original	8	Ticket	4152	CASH	05/10/2014 17:12:50	1	2	326	5	05/10/2014	8766	1	2	1	2	8.80	0.00			
Original	8	Ticket	4153	CASH	05/10/2014 17:13:13	1	2	226	2	05/10/2014	643	1	2	1	2	2.60	0.00			
Original	8	Ticket	4154	CASH	05/10/2014 17:13:46	1	2	326	5	05/10/2014	8883	1	2	1	2	8.80	0.00			84
Original	8	Ticket	4155	CASH	05/10/2014 17:14:32	1	2	298	1	05/10/2014	4875	1	2	1	2	4.95	0.00			72
Original	8	Ticket	4156	CASH	05/10/2014 17:14:50	1	2	146	1	05/10/2014	7319	1	2	1	2	11.20	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4157	CASH	05/10/2014 17:15:33	1	2	75	4	05/10/2014	2208	1	2	1	2	$19.35	$0.00			
Original	8	Ticket	4158	CASH	05/10/2014 17:16:39	1	2	0	0		0	0	0	1	2	24.60	0.00			64 72 83 96
Original	8	Ticket	4159	CASH	05/10/2014 17:17:12	1	2	286	3	05/10/2014	7541	1	2	1	2	4.00	0.00			
Original	8	Ticket	4160	CASH	05/10/2014 17:17:29	1	2	312	3	05/10/2014	668	1	2	1	2	6.45	0.00			
Original	8	Ticket	4161	CASH	05/10/2014 17:17:59	1	2	298	1	05/10/2014	4884	1	2	1	2	4.95	0.00			
Original	8	Ticket	4162	CASH	05/10/2014 17:18:19	1	2	110	1	05/10/2014	5258	1	2	1	2	15.40	0.00			
Original	8	Ticket	4163	CASH	05/10/2014 17:19:04	1	2	242	1	05/10/2014	708	1	2	1	2	1.60	0.00			
Original	8	Ticket	4164	CASH	05/10/2014 17:19:20	1	2	75	4	05/10/2014	2504	1	2	1	2	19.35	0.00			
Original	8	Ticket	4165	CASH	05/10/2014 17:19:42	1	2	236	3	05/10/2014	6710	1	2	1	2	2.05	0.00			
Original	8	Ticket	4166	CASH	05/10/2014 17:19:55	1	2	75	4	05/10/2014	2432	1	2	1	2	19.35	0.00			
Original	8	Ticket	4167	CASH	05/10/2014 17:20:20	5	5	75	4	05/10/2014	2157	5	5	5	5	55.80	0.00			72
Original	8	Ticket	4168	CASH	05/10/2014 17:21:27	1	2	326	5	05/10/2014	8843	1	2	1	2	8.80	0.00			
Original	8	Ticket	4169	CASH	05/10/2014 17:21:44	1	2	75	4	05/10/2014	2287	1	2	1	2	19.35	0.00			
Original	8	Ticket	4170	CASH	05/10/2014 17:22:07	1	2	236	3	05/10/2014	6715	1	2	1	2	2.05	0.00			
Original	8	Ticket	4171	CASH	05/10/2014 17:22:38	1	2	30	1	05/10/2014	4667	1	2	1	2	24.60	0.00			
Original	8	Ticket	4172	CASH	05/10/2014 17:22:56	1	2	326	5	05/10/2014	8490	1	2	1	2	8.80	0.00			
Original	8	Ticket	4173	CASH	05/10/2014 17:23:14	1	2	242	3	05/10/2014	55	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4174	CASH	05/10/2014 17:23:35	1	2	242	1	05/10/2014	716	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4175	CASH	05/10/2014 17:23:53	1	2	312	1	05/10/2014	6264	1	2	1	2	6.45	0.00			
Original	8	Ticket	4176	CASH	05/10/2014 17:24:25	1	2	242	1	05/10/2014	717	1	2	1	2	1.60	0.00			
Original	8	Ticket	4177	CASH	05/10/2014 17:24:36	1	2	312	1	05/10/2014	6263	1	2	1	2	6.45	0.00			
Original	8	Ticket	4178	CASH	05/10/2014 17:24:57	1	2	242	3	05/10/2014	57	1	2	1	2	1.60	0.00			
Original	8	Ticket	4179	CASH	05/10/2014 17:25:12	1	2	236	3	05/10/2014	6726	1	2	1	2	2.05	0.00			
Original	8	Ticket	4180	CASH	05/10/2014 17:25:36	1	2	266	1	05/10/2014	3865	1	2	1	2	2.60	0.00			
Original	8	Ticket	4181	CASH	05/10/2014 17:25:58	1	2	326	3	05/10/2014	3012	1	2	1	2	8.80	0.00			
Original	8	Ticket	4182	CASH	05/10/2014 17:26:18	1	2	266	3	05/10/2014	2665	1	2	1	2	2.60	0.00			
Original	8	Ticket	4183	CASH	05/10/2014 17:26:36	1	2	226	4	05/10/2014	3974	1	2	1	2	2.60	0.00			
Original	8	Ticket	4184	CASH	05/10/2014 17:26:52	1	2	266	1	05/10/2014	3866	1	2	1	2	2.60	0.00			
Original	8	Ticket	4185	CASH	05/10/2014 17:27:06	1	2	31	2	05/10/2014	8900	1	2	1	2	11.20	0.00			72
Original	8	Ticket	4186	CASH	05/10/2014 17:27:29	1	2	180	2	05/10/2014	6395	1	2	1	2	7.80	0.00			
Original	8	Ticket	4187	CASH	05/10/2014 17:27:54	1	2	312	3	05/10/2014	715	1	2	1	2	6.45	0.00			
Original	8	Ticket	4188	CASH	05/10/2014 17:28:20	1	2	161	4	05/10/2014	6182	1	2	1	2	9.25	0.00			
Original	8	Ticket	4189	CASH	05/10/2014 17:28:41	1	2	75	4	05/10/2014	2461	1	2	1	2	19.35	0.00			
Original	8	Ticket	4190	CASH	05/10/2014 17:29:28	1	2	0	0		0	0	0	1	2	24.60	0.00			64 72 96

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4191	CASH	05/10/2014 17:30:22	1	2	286	3	05/10/2014	7592	1	2	1	2	$4.00	$0.00			126
Original	8	Ticket	4192	CASH	05/10/2014 17:30:37	1	2	236	3	05/10/2014	6737	1	2	1	2	2.05	0.00			72
Original	8	Ticket	4193	CASH	05/10/2014 17:31:03	1	2	236	3	05/10/2014	6736	1	2	1	2	2.05	0.00			
Original	8	Ticket	4194	CASH	05/10/2014 17:31:17	1	2	226	4	05/10/2014	3986	1	2	1	2	2.60	0.00			72
Original	8	Ticket	4195	CASH	05/10/2014 17:31:48	1	2	312	2	05/10/2014	8083	1	2	1	2	6.45	0.00			
Original	8	Ticket	4196	CASH	05/10/2014 17:32:20	1	2	242	1	05/10/2014	727	1	2	1	2	1.60	0.00			
Original	8	Ticket	4197	CASH	05/10/2014 17:32:42	1	2	146	2	05/10/2014	8078	1	2	1	2	11.20	0.00			
Original	8	Ticket	4198	CASH	05/10/2014 17:32:52	3	2	298	1	05/10/2014	4915	3	2	3	2	9.25	0.00			72
Original	8	Ticket	4199	CASH	05/10/2014 17:33:17	1	2	298	1	05/10/2014	4924	1	2	1	2	4.95	0.00			
Original	8	Ticket	4200	CASH	05/10/2014 17:34:01	1	2	326	5	05/10/2014	6	1	2	1	2	8.80	0.00			
Original	8	Ticket	4201	CASH	05/10/2014 17:34:26	1	2	161	4	05/10/2014	6185	1	2	1	2	9.25	0.00			
Original	8	Ticket	4202	CASH	05/10/2014 17:34:46	1	2	226	4	05/10/2014	3992	1	2	1	2	2.60	0.00			
Original	8	Ticket	4203	CASH	05/10/2014 17:35:09	1	2	226	2	05/10/2014	686	1	2	1	2	2.60	0.00			
Original	8	Ticket	4204	CASH	05/10/2014 17:35:23	1	2	242	1	05/10/2014	736	1	2	1	2	1.60	0.00			
Original	8	Ticket	4205	CASH	05/10/2014 17:36:15	1	2	326	3	05/10/2014	3053	1	2	1	2	8.80	0.00			
Original	8	Ticket	4206	CASH	05/10/2014 17:36:50	1	2	326	5	05/10/2014	8743	1	2	1	2	8.80	0.00			
Original	8	Ticket	4207	CASH	05/10/2014 17:37:16	1	2	242	1	05/10/2014	739	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4208	CASH	05/10/2014 17:37:33	1	2	326	5	05/10/2014	11	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4209	CASH	05/10/2014 17:37:52	1	2	326	5	05/10/2014	12	1	2	1	2	8.80	0.00			
Original	8	Ticket	4210	CASH	05/10/2014 17:38:19	1	2	236	3	05/10/2014	6747	1	2	1	2	2.05	0.00			
Original	8	Ticket	4211	CASH	05/10/2014 17:38:33	1	2	242	1	05/10/2014	744	1	2	1	2	1.60	0.00			
Original	8	Ticket	4212	CASH	05/10/2014 17:38:55	1	2	326	3	05/10/2014	3062	1	2	1	2	8.80	0.00			
Original	8	Ticket	4213	CASH	05/10/2014 17:39:30	1	2	242	1	05/10/2014	745	1	2	1	2	1.60	0.00			
Original	8	Ticket	4214	CASH	05/10/2014 17:39:47	1	2	226	4	05/10/2014	4000	1	2	1	2	2.60	0.00			
Original	8	Ticket	4215	CASH	05/10/2014 17:40:21	1	2	312	1	05/10/2014	6419	1	2	1	2	6.45	0.00			
Original	8	Ticket	4216	CASH	05/10/2014 17:40:32	1	2	242	1	05/10/2014	748	1	2	1	2	1.60	0.00			
Original	8	Ticket	4217	CASH	05/10/2014 17:40:47	1	2	236	3	05/10/2014	6759	1	2	1	2	2.05	0.00			
Original	8	Ticket	4218	CASH	05/10/2014 17:41:05	1	2	326	3	05/10/2014	3123	1	2	1	2	8.80	0.00			
Original	8	Ticket	4219	CASH	05/10/2014 17:41:28	1	2	359	4	05/10/2014	2744	1	2	1	2	14.10	0.00			
Original	8	Ticket	4220	CASH	05/10/2014 17:42:11	1	2	75	1	05/10/2014	122	2	3	1	2	19.35	0.00			11
Original	8	Ticket	4221	CASH	05/10/2014 17:42:33	1	2	242	1	05/10/2014	751	1	2	1	2	1.60	0.00			
Original	8	Ticket	4222	CASH	05/10/2014 17:42:48	1	2	298	1	05/10/2014	4944	1	2	1	2	4.95	0.00			
Original	8	Ticket	4223	CASH	05/10/2014 17:43:05	1	2	326	3	05/10/2014	3066	1	2	1	2	8.80	0.00			
Original	8	Ticket	4224	CASH	05/10/2014 17:44:20	1	2	326	5	05/10/2014	8994	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4225	CASH	05/10/2014 17:44:50	1	2	298	1	05/10/2014	4955	1	2	1	2	$4.95	$0.00			
Original	8	Ticket	4226	CASH	05/10/2014 17:45:19	1	2	286	3	05/10/2014	7647	1	2	1	2	4.00	0.00			
Original	8	Ticket	4227	CASH	05/10/2014 17:45:35	1	2	326	5	05/10/2014	96	1	2	1	2	8.80	0.00			
Original	8	Ticket	4228	CASH	05/10/2014 17:46:01	1	2	242	1	05/10/2014	757	1	2	1	2	1.60	0.00			
Original	8	Ticket	4229	CASH	05/10/2014 17:46:43	1	2	226	4	05/10/2014	4013	1	2	1	2	2.60	0.00			
Original	8	Ticket	4230	CASH	05/10/2014 17:47:10	1	2	326	3	05/10/2014	3145	1	2	1	2	8.80	0.00			
Original	8	Ticket	4231	CASH	05/10/2014 17:48:35	1	2	242	1	05/10/2014	764	1	2	1	2	1.60	0.00			
Original	8	Ticket	4232	CASH	05/10/2014 17:48:49	1	2	236	3	05/10/2014	6773	1	2	1	2	2.05	0.00			
Original	8	Ticket	4233	CASH	05/10/2014 17:49:05	1	2	226	1	05/10/2014	1519	1	2	1	2	2.60	0.00			
Original	8	Ticket	4234	CASH	05/10/2014 17:49:24	0	0	0	0		0	0	0	0	1	0.00	0.00			31
Original	8	Ticket	4235	CASH	05/10/2014 17:50:28	2	2	180	2	05/10/2014	6408	2	2	1	2	11.20	0.00			24
Original	8	Ticket	4236	CASH	05/10/2014 17:50:56	1	2	146	1	05/10/2014	7495	1	2	1	2	11.20	0.00			
Original	8	Ticket	4237	CASH	05/10/2014 17:51:21	1	2	286	3	05/10/2014	7655	1	2	1	2	4.00	0.00			
Original	8	Ticket	4238	CASH	05/10/2014 17:51:35	1	2	326	5	05/10/2014	125	1	2	1	2	8.80	0.00			
Original	8	Ticket	4239	CASH	05/10/2014 17:52:19	1	2	312	1	05/10/2014	6410	1	2	1	2	6.45	0.00			
Original	8	Ticket	4240	CASH	05/10/2014 17:53:30	1	2	242	1	05/10/2014	770	1	2	1	2	1.60	0.00			
Original	8	Ticket	4241	CASH	05/10/2014 17:53:58	1	2	226	4	05/10/2014	4029	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4242	CASH	05/10/2014 17:55:10	1	2	326	5	05/10/2014	24	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4243	CASH	05/10/2014 17:55:30	1	2	242	1	05/10/2014	775	1	2	1	2	1.60	0.00			
Original	8	Ticket	4244	CASH	05/10/2014 17:55:46	1	2	266	1	05/10/2014	3921	1	2	1	2	2.60	0.00			
Original	8	Ticket	4245	CASH	05/10/2014 17:56:13	1	2	266	1	05/10/2014	3922	1	2	1	2	2.60	0.00			
Original	8	Ticket	4327	CASH	05/10/2014 18:34:32	1	2	326	5	05/10/2014	448	1	2	1	2	8.80	0.00			
Original	8	Ticket	4328	CASH	05/10/2014 18:34:57	1	2	326	5	05/10/2014	426	1	2	1	2	8.80	0.00			
Original	8	Ticket	4329	CASH	05/10/2014 18:35:24	1	2	226	2	05/10/2014	785	1	2	1	2	2.60	0.00			
Original	8	Ticket	4330	CASH	05/10/2014 18:35:40	1	2	57	3	05/10/2014	7836	1	2	1	2	21.30	0.00			
Original	8	Ticket	4331	CASH	05/10/2014 18:36:03	2	4	146	2	05/10/2014	8204	2	4	2	4	16.50	0.00			126
Original	8	Ticket	4332	CASH	05/10/2014 18:36:37	1	2	351	1	05/10/2014	2429	1	2	1	2	12.60	0.00			
Original	8	Ticket	4333	CASH	05/10/2014 18:37:02	1	2	326	3	05/10/2014	3366	1	2	1	2	8.80	0.00			
Original	8	Ticket	4334	CASH	05/10/2014 18:37:25	1	2	351	5	05/10/2014	2123	1	2	1	2	12.60	0.00			
Original	8	Ticket	4335	CASH	05/10/2014 18:37:50	1	2	339	4	05/10/2014	7484	1	2	1	2	10.75	0.00			
Original	8	Ticket	4336	CASH	05/10/2014 18:38:03	1	2	226	1	05/10/2014	1569	1	2	1	2	2.60	0.00			
Original	8	Ticket	4337	CASH	05/10/2014 18:38:24	1	2	326	3	05/10/2014	3383	1	2	1	2	8.80	0.00			
Original	8	Ticket	4338	CASH	05/10/2014 18:38:51	1	2	146	2	05/10/2014	8191	1	2	1	2	11.20	0.00			
Original	8	Ticket	4339	CASH	05/10/2014 18:39:06	1	2	326	5	05/10/2014	351	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry											
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4340	CASH	05/10/2014 18:39:29	1	2	312	1	05/10/2014	6573	1	2	1	2	$6.45	$0.00			
Original	8	Ticket	4341	CASH	05/10/2014 18:39:52	1	2	242	1	05/10/2014	855	1	2	1	2	1.60	0.00			
Original	8	Ticket	4342	CASH	05/10/2014 18:40:04	1	2	266	3	05/10/2014	2763	1	2	1	2	2.60	0.00			
Original	8	Ticket	4343	CASH	05/10/2014 18:40:27	1	2	266	3	05/10/2014	2764	1	2	1	2	2.60	0.00			
Original	8	Ticket	4344	CASH	05/10/2014 18:40:51	1	2	236	3	05/10/2014	6855	1	2	1	2	2.05	0.00			
Original	8	Ticket	4345	CASH	05/10/2014 18:41:12	1	2	326	3	05/10/2014	3433	1	2	1	2	8.80	0.00			
Original	8	Ticket	4346	CASH	05/10/2014 18:41:30	1	2	359	4	05/10/2014	3145	1	2	1	2	14.10	0.00			
Original	8	Ticket	4347	CASH	05/10/2014 18:42:04	1	2	359	1	05/10/2014	7966	1	2	1	2	14.10	0.00			
Original	8	Ticket	4348	CASH	05/10/2014 18:42:24	1	2	226	4	05/10/2014	4100	1	2	1	2	2.60	0.00			
Original	8	Ticket	4349	CASH	05/10/2014 18:42:38	1	2	351	3	05/10/2014	5799	1	2	1	2	12.60	0.00			
Original	8	Ticket	4350	CASH	05/10/2014 18:43:04	1	2	146	1	05/10/2014	7689	1	2	1	2	11.20	0.00			
Original	8	Ticket	4351	CASH	05/10/2014 18:43:38	1	2	236	3	05/10/2014	6858	1	2	1	2	2.05	0.00			
Original	8	Ticket	4352	CASH	05/10/2014 18:44:02	1	2	326	5	05/10/2014	527	1	2	1	2	8.80	0.00			
Original	8	Ticket	4353	CASH	05/10/2014 18:44:22	1	2	326	3	05/10/2014	3458	1	2	1	2	8.80	0.00			
Original	8	Ticket	4354	CASH	05/10/2014 18:44:44	1	2	312	3	05/10/2014	914	1	2	1	2	6.45	0.00			
Original	8	Ticket	4355	CASH	05/10/2014 18:45:05	1	2	326	5	05/10/2014	547	1	2	1	2	8.80	0.00			
Original	8	Ticket	4356	CASH	05/10/2014 18:45:41	1	2	242	2	05/10/2014	2655	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4357	CASH	05/10/2014 18:45:52	1	2	57	3	05/10/2014	7840	1	2	1	2	$21.30	$0.00			
Original	8	Ticket	4358	CASH	05/10/2014 18:47:14	1	2	266	3	05/10/2014	2769	1	2	1	2	2.60	0.00			
Original	8	Ticket	4359	CASH	05/10/2014 18:47:42	1	2	326	5	05/10/2014	537	1	2	1	2	8.80	0.00			
Original	8	Ticket	4360	CASH	05/10/2014 18:48:08	1	2	226	2	05/10/2014	802	1	2	1	2	2.60	0.00			
Original	8	Ticket	4361	CASH	05/10/2014 18:48:32	1	2	326	3	05/10/2014	3482	1	2	1	2	8.80	0.00			
Original	8	Ticket	4362	CASH	05/10/2014 18:48:52	1	2	236	3	05/10/2014	6866	1	2	1	2	2.05	0.00			
Original	8	Ticket	4363	CASH	05/10/2014 18:49:00	1	2	326	5	05/10/2014	561	1	2	1	2	8.80	0.00			
Original	8	Ticket	4364	CASH	05/10/2014 18:49:20	1	2	326	5	05/10/2014	568	1	2	1	2	8.80	0.00			
Original	8	Ticket	4365	CASH	05/10/2014 18:50:01	1	2	326	5	05/10/2014	613	1	2	1	2	8.80	0.00			
Original	8	Ticket	4366	CASH	05/10/2014 18:50:40	1	2	326	5	05/10/2014	592	1	2	1	2	8.80	0.00			
Original	8	Ticket	4367	CASH	05/10/2014 18:51:18	1	2	48	1	05/10/2014	20	1	2	1	2	22.20	0.00			
Original	8	Ticket	4368	CASH	05/10/2014 18:51:35	1	2	266	1	05/10/2014	3980	1	2	1	2	2.60	0.00			
Original	8	Ticket	4369	CASH	05/10/2014 18:52:03	1	2	351	3	05/10/2014	5958	1	2	1	2	12.60	0.00			
Original	8	Ticket	4370	CASH	05/10/2014 18:52:35	1	2	312	3	05/10/2014	929	1	2	1	2	6.45	0.00			
Original	8	Ticket	4371	CASH	05/10/2014 18:52:58	2	2	242	1	05/10/2014	876	2	2	1	2	1.60	0.00			24
Original	8	Ticket	4372	ETC	05/10/2014 18:53:35			0	99	05/10/2014	0	0	0	1	2	0.00	0.00			72 81
Original	8	Ticket	4373	CASH	05/10/2014 18:53:54	1	2	266	1	05/10/2014	3981	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4374	CASH	05/10/2014 18:54:19	1	2	326	5	05/10/2014	523	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4375	CASH	05/10/2014 18:54:48	1	2	312	1	05/10/2014	6618	1	2	1	2	6.45	0.00			126
Original	8	Ticket	4376	CASH	05/10/2014 18:55:13	1	2	146	2	05/10/2014	8358	1	2	1	2	11.20	0.00			
Original	8	Ticket	4377	CASH	05/10/2014 18:55:36	1	2	226	4	05/10/2014	4120	1	2	1	2	2.60	0.00			
Original	8	Ticket	4378	CASH	05/10/2014 18:56:03	1	2	326	5	05/10/2014	334	1	2	1	2	8.80	0.00			
Original	8	Ticket	4379	CASH	05/10/2014 18:56:24	1	2	242	1	05/10/2014	879	1	2	1	2	1.60	0.00			
Original	8	Ticket	4380	CASH	05/10/2014 18:56:42	1	2	312	3	05/10/2014	923	1	2	1	2	6.45	0.00			
Original	8	Ticket	4381	CASH	05/10/2014 18:57:06	1	2	326	5	05/10/2014	593	1	2	1	2	8.80	0.00			
Original	8	Ticket	4382	CASH	05/10/2014 18:57:45	2	2	312	1	05/10/2014	6612	2	2	1	2	0.00	9.70			24 62 115 120
Original	8	Ticket	4383	CASH	05/10/2014 18:59:31	1	2	236	3	05/10/2014	6878	1	2	1	2	2.05	0.00			
Original	8	Ticket	4384	CASH	05/10/2014 19:00:27	1	2	75	4	05/10/2014	2726	1	2	1	2	19.35	0.00			72
Original	8	Ticket	4385	CASH	05/10/2014 19:00:47	1	2	298	1	05/10/2014	5112	1	2	1	2	4.95	0.00			
Original	8	Ticket	4386	CASH	05/10/2014 19:01:07	1	2	298	1	05/10/2014	5116	1	2	1	2	4.95	0.00			
Original	8	Ticket	4387	CASH	05/10/2014 19:01:30	1	2	110	1	05/10/2014	5407	1	2	1	2	15.40	0.00			
Original	8	Ticket	4388	CASH	05/10/2014 19:01:49	1	2	326	5	05/10/2014	620	1	2	1	2	8.80	0.00			
Original	8	Ticket	4389	CASH	05/10/2014 19:02:09	1	2	236	3	05/10/2014	6881	1	2	1	2	2.05	0.00			101
Original	8	Ticket	4390	CASH	05/10/2014 19:02:17	1	2	75	1	05/10/2014	142	1	2	1	2	19.35	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4391	CASH	05/10/2014 19:02:35	1	2	326	5	05/10/2014	644	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4392	CASH	05/10/2014 19:02:50	1	2	242	1	05/10/2014	890	1	2	1	2	1.60	0.00			
Original	8	Ticket	4393	CASH	05/10/2014 19:03:26	1	2	226	2	05/10/2014	820	1	2	1	2	2.60	0.00			
Original	8	Ticket	4394	CASH	05/10/2014 19:03:57	1	2	326	5	05/10/2014	607	1	2	1	2	8.80	0.00			
Original	8	Ticket	4395	CASH	05/10/2014 19:04:34	1	2	75	4	05/10/2014	2769	1	2	1	2	19.35	0.00			
Original	8	Ticket	4396	CASH	05/10/2014 19:05:19	1	2	236	3	05/10/2014	6884	1	2	1	2	2.05	0.00			
Original	8	Ticket	4397	CASH	05/10/2014 19:05:50	1	2	242	1	05/10/2014	898	1	2	1	2	1.60	0.00			
Original	8	Ticket	4398	CASH	05/10/2014 19:06:01	1	2	326	5	05/10/2014	674	1	2	1	2	8.80	0.00			
Original	8	Ticket	4399	CASH	05/10/2014 19:06:18	1	2	286	3	05/10/2014	7860	1	2	1	2	4.00	0.00			
Original	8	Ticket	4400	CASH	05/10/2014 19:06:34	1	2	326	5	05/10/2014	681	1	2	1	2	8.80	0.00			
Original	8	Ticket	4401	CASH	05/10/2014 19:06:52	1	2	242	1	05/10/2014	900	1	2	1	2	1.60	0.00			
Original	8	Ticket	4402	CASH	05/10/2014 19:07:04	1	2	326	5	05/10/2014	323	1	2	1	2	8.80	0.00			
Original	8	Ticket	4403	CASH	05/10/2014 19:07:34	1	2	236	3	05/10/2014	6889	1	2	1	2	2.05	0.00			
Original	8	Ticket	4404	CASH	05/10/2014 19:08:20	1	2	146	1	05/10/2014	7768	1	2	1	2	11.20	0.00			
Original	8	Ticket	4405	CASH	05/10/2014 19:09:39	1	2	226	4	05/10/2014	4138	1	2	1	2	2.60	0.00			
Original	8	Ticket	4406	CASH	05/10/2014 19:09:54	1	2	226	2	05/10/2014	835	1	2	1	2	2.60	0.00			
Original	8	Ticket	4407	CASH	05/10/2014 19:10:14	1	2	339	1	05/10/2014	2460	1	2	1	2	10.75	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4408	CASH	05/10/2014 19:10:47	1	2	226	2	05/10/2014	831	1	2	1	2	$2.60	$0.00			101
Original	8	Ticket	4409	CASH	05/10/2014 19:11:00	1	2	266	3	05/10/2014	2791	1	2	1	2	2.60	0.00			
Original	8	Ticket	4410	CASH	05/10/2014 19:11:16	1	2	242	1	05/10/2014	902	1	2	1	2	1.60	0.00			
Original	8	Ticket	4411	CASH	05/10/2014 19:11:32	1	2	326	5	05/10/2014	730	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4412	CASH	05/10/2014 19:11:53	1	2	242	3	05/10/2014	171	1	2	1	2	1.60	0.00			
Original	8	Ticket	4413	CASH	05/10/2014 19:12:27	1	2	242	1	05/10/2014	904	1	2	1	2	1.60	0.00			101
Original	8	Ticket	4414	CASH	05/10/2014 19:12:52	1	2	326	5	05/10/2014	569	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4415	CASH	05/10/2014 19:13:13	1	2	242	1	05/10/2014	906	1	2	1	2	1.60	0.00			
Original	8	Ticket	4416	CASH	05/10/2014 19:13:25	1	2	326	5	05/10/2014	705	1	2	1	2	8.80	0.00			
Original	8	Ticket	4417	CASH	05/10/2014 19:13:50	1	2	226	2	05/10/2014	839	1	2	1	2	2.60	0.00			
Original	8	Ticket	4418	CASH	05/10/2014 19:15:10	1	2	75	4	05/10/2014	2808	1	2	1	2	19.35	0.00			
Original	8	Ticket	4419	CASH	05/10/2014 19:15:33	2	3	75	4	05/10/2014	2736	2	3	2	3	28.00	0.00			72
Original	8	Ticket	4420	CASH	05/10/2014 19:16:01	1	2	75	4	05/10/2014	2737	1	2	1	2	19.35	0.00			
Original	8	Ticket	4421	CASH	05/10/2014 19:16:18	1	2	75	2	05/10/2014	5852	1	2	1	2	19.35	0.00			
Original	8	Ticket	4422	CASH	05/10/2014 19:16:35	1	2	146	2	05/10/2014	8269	1	2	1	2	11.20	0.00			
Original	8	Ticket	4423	CASH	05/10/2014 19:17:04	1	2	266	3	05/10/2014	2795	1	2	1	2	2.60	0.00			
Original	8	Ticket	4424	CASH	05/10/2014 19:17:22	1	2	226	4	05/10/2014	4156	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4425	CASH	05/10/2014 19:17:42	1	2	236	3	05/10/2014	6896	1	2	1	2	$2.05	$0.00			
Original	8	Ticket	4426	CASH	05/10/2014 19:18:06	1	2	326	5	05/10/2014	773	1	2	1	2	8.80	0.00			
Original	8	Ticket	4427	CASH	05/10/2014 19:18:26	1	2	242	1	05/10/2014	914	1	2	1	2	1.60	0.00			
Original	8	Ticket	4428	CASH	05/10/2014 19:18:40	1	2	201	2	05/10/2014	4347	1	2	1	2	4.95	0.00			
Original	8	Ticket	4429	CASH	05/10/2014 19:19:02	1	2	312	3	05/10/2014	976	1	2	1	2	6.45	0.00			
Original	8	Ticket	4430	CASH	05/10/2014 19:19:37	1	2	312	3	05/10/2014	986	1	2	1	2	6.45	0.00			
Original	8	Ticket	4431	CASH	05/10/2014 19:20:08	1	2	326	5	05/10/2014	800	1	2	1	2	8.80	0.00			
Original	8	Ticket	4432	CASH	05/10/2014 19:20:33	1	2	326	5	05/10/2014	779	1	2	1	2	8.80	0.00			
Original	8	Ticket	4433	CASH	05/10/2014 19:21:16	1	2	326	5	05/10/2014	717	1	2	1	2	8.80	0.00			
Original	8	Ticket	4434	CASH	05/10/2014 19:21:48	1	2	146	2	05/10/2014	8426	1	2	1	2	11.20	0.00			
Original	8	Ticket	4435	CASH	05/10/2014 19:22:03	2	3	312	1	05/10/2014	6685	2	3	2	3	9.70	0.00			
Original	8	Ticket	4436	CASH	05/10/2014 19:22:24	1	2	326	5	05/10/2014	704	1	2	1	2	8.80	0.00			
Original	8	Ticket	4437	CASH	05/10/2014 19:23:00	1	2	242	1	05/10/2014	923	1	2	1	2	1.60	0.00			
Original	8	Ticket	4438	CASH	05/10/2014 19:23:31	1	2	326	5	05/10/2014	725	1	2	1	2	8.80	0.00			
Original	8	Ticket	4439	CASH	05/10/2014 19:23:52	1	2	236	1	05/10/2014	866	1	2	1	2	2.05	0.00			101
Original	8	Ticket	4440	CASH	05/10/2014 19:24:12	1	2	326	5	05/10/2014	669	1	2	1	2	8.80	0.00			
Original	8	Ticket	4441	CASH	05/10/2014 19:24:52	1	2	326	5	05/10/2014	804	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4442	CASH	05/10/2014 19:25:35	1	2	286	3	05/10/2014	7908	1	2	1	2	$4.00	$0.00			
Original	8	Ticket	4443	CASH	05/10/2014 19:25:46	1	2	326	5	05/10/2014	775	1	2	1	2	8.80	0.00			
Original	8	Ticket	4444	CASH	05/10/2014 19:26:12	1	2	326	5	05/10/2014	802	1	2	1	2	8.80	0.00			
Original	8	Ticket	4445	CASH	05/10/2014 19:27:02	1	2	339	1	05/10/2014	2531	1	2	1	2	10.75	0.00			
Original	8	Ticket	4446	CASH	05/10/2014 19:27:44	1	2	286	3	05/10/2014	7918	1	2	1	2	4.00	0.00			
Original	8	Ticket	4447	CASH	05/10/2014 19:28:02	1	2	286	3	05/10/2014	7919	1	2	1	2	4.00	0.00			
Original	8	Ticket	4448	CASH	05/10/2014 19:28:11	1	2	242	1	05/10/2014	931	1	2	1	2	1.60	0.00			
Original	8	Ticket	4449	CASH	05/10/2014 19:28:42	1	2	339	4	05/10/2014	7618	1	2	1	2	10.75	0.00			
Original	8	Ticket	4450	CASH	05/10/2014 19:29:06	1	2	326	5	05/10/2014	774	1	2	1	2	8.80	0.00			
Original	8	Ticket	4451	CASH	05/10/2014 19:29:31	1	2	30	1	05/10/2014	4885	1	2	1	2	24.60	0.00			
Original	8	Ticket	4452	CASH	05/10/2014 19:30:22	1	2	57	3	05/10/2014	7834	1	2	1	2	21.30	0.00			
Original	8	Ticket	4453	CASH	05/10/2014 19:30:50	1	2	333	5	05/10/2014	2299	1	2	1	2	9.70	0.00			
Original	8	Ticket	4454	CASH	05/10/2014 19:31:16	1	2	298	1	05/10/2014	5163	1	2	1	2	4.95	0.00			
Original	8	Ticket	4455	CASH	05/10/2014 19:31:34	1	2	343	1	05/10/2014	8908	1	2	1	2	11.65	0.00			
Original	8	Ticket	4456	CASH	05/10/2014 19:31:52	1	2	326	5	05/10/2014	861	1	2	1	2	8.80	0.00			
Original	8	Ticket	4457	CASH	05/10/2014 19:32:15	1	2	326	5	05/10/2014	862	1	2	1	2	8.80	0.00			
Original	8	Ticket	4458	CASH	05/10/2014 19:32:55	1	2	161	4	05/10/2014	6416	1	2	1	2	9.25	0.00			72

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4459	CASH	05/10/2014 19:33:17	1	2	226	4	05/10/2014	4190	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	4460	CASH	05/10/2014 19:33:30	1	2	312	3	05/10/2014	1011	1	2	1	2	6.45	0.00			
Original	8	Ticket	4461	CASH	05/10/2014 19:34:07	1	2	326	5	05/10/2014	876	1	2	1	2	8.80	0.00			
Original	8	Ticket	4462	CASH	05/10/2014 19:34:23	1	2	236	3	05/10/2014	6912	1	2	1	2	2.05	0.00			72
Original	8	Ticket	4463	CASH	05/10/2014 19:34:48	1	2	326	5	05/10/2014	753	1	2	1	2	8.80	0.00			
Original	8	Ticket	4464	CASH	05/10/2014 19:35:24	1	2	312	2	05/10/2014	8696	1	2	1	2	6.45	0.00			
Original	8	Ticket	4465	CASH	05/10/2014 19:35:52	1	2	326	5	05/10/2014	863	1	2	1	2	8.80	0.00			
Original	8	Ticket	4466	CASH	05/10/2014 19:37:57	1	2	57	3	05/10/2014	8284	1	2	1	2	21.30	0.00			72
Original	8	Ticket	4467	CASH	05/10/2014 19:38:46	1	2	326	3	05/10/2014	3696	1	2	1	2	8.80	0.00			
Original	8	Ticket	4468	CASH	05/10/2014 19:39:06	1	2	75	4	05/10/2014	2866	1	2	1	2	19.35	0.00			72
Original	8	Ticket	4469	CASH	05/10/2014 19:39:40	1	2	75	4	05/10/2014	2867	1	2	1	2	19.35	0.00			
Original	8	Ticket	4470	CASH	05/10/2014 19:40:02	1	2	146	2	05/10/2014	8465	1	2	1	2	11.20	0.00			
Original	8	Ticket	4471	CASH	05/10/2014 19:40:32	1	2	326	5	05/10/2014	893	1	2	1	2	8.80	0.00			
Original	8	Ticket	4472	CASH	05/10/2014 19:41:04	1	2	326	5	05/10/2014	894	1	2	1	2	8.80	0.00			
Original	8	Ticket	4473	CASH	05/10/2014 19:41:15	1	2	146	1	05/10/2014	7900	1	2	1	2	11.20	0.00			
Original	8	Ticket	4474	ETC	05/10/2014 19:42:00			326	6	05/10/2014	0	0	0	1	2	0.00	0.00			72 81 82
Original	8	Ticket	4475	CASH	05/10/2014 19:42:22	1	2	161	3	05/10/2014	5551	1	2	1	2	9.25	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4476	CASH	05/10/2014 19:42:39	1	2	242	1	05/10/2014	944	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4477	CASH	05/10/2014 19:42:56	1	2	242	1	05/10/2014	945	1	2	1	2	1.60	0.00			
Original	8	Ticket	4478	CASH	05/10/2014 19:44:06	1	2	236	3	05/10/2014	6920	1	2	1	2	2.05	0.00			
Original	8	Ticket	4479	CASH	05/10/2014 19:44:44	1	2	242	1	05/10/2014	947	1	2	1	2	1.60	0.00			
Original	8	Ticket	4480	CASH	05/10/2014 19:45:10	1	2	312	3	05/10/2014	1013	1	2	1	2	6.45	0.00			
Original	8	Ticket	4481	CASH	05/10/2014 19:46:00	1	2	326	5	05/10/2014	896	1	2	1	2	8.80	0.00			
Original	8	Ticket	4482	CASH	05/10/2014 19:46:55	1	2	326	5	05/10/2014	912	1	2	1	2	8.80	0.00			
Original	8	Ticket	4483	CASH	05/10/2014 19:47:17	1	2	351	3	05/10/2014	6182	1	2	1	2	12.60	0.00			72
Original	8	Ticket	4484	CASH	05/10/2014 19:48:07	1	2	146	2	05/10/2014	8478	1	2	1	2	11.20	0.00			
Original	8	Ticket	4485	CASH	05/10/2014 19:48:36	1	2	326	5	05/10/2014	930	1	2	1	2	8.80	0.00			
Original	8	Ticket	4486	CASH	05/10/2014 19:49:13	1	2	351	5	05/10/2014	2356	1	2	1	2	12.60	0.00			
Original	8	Ticket	4487	CASH	05/10/2014 19:49:57	1	2	326	5	05/10/2014	969	1	2	1	2	8.80	0.00			
Original	8	Ticket	4488	CASH	05/10/2014 19:50:15	1	2	326	5	05/10/2014	935	1	2	1	2	8.80	0.00			
Original	8	Ticket	4489	CASH	05/10/2014 19:50:52	1	2	339	1	05/10/2014	2639	1	2	1	2	10.75	0.00			
Original	8	Ticket	4490	CASH	05/10/2014 19:53:16	1	2	226	2	05/10/2014	884	1	2	1	2	2.60	0.00			
Original	8	Ticket	4491	CASH	05/10/2014 19:54:22	1	2	236	3	05/10/2014	6928	1	2	1	2	2.05	0.00			101
Original	8	Ticket	4492	CASH	05/10/2014 19:54:34	1	2	326	5	05/10/2014	941	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4493	CASH	05/10/2014 19:55:55	1	2	242	1	05/10/2014	958	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4494	CASH	05/10/2014 19:56:13	1	2	326	5	05/10/2014	1008	1	2	1	2	8.80	0.00			
Original	8	Ticket	4495	CASH	05/10/2014 19:57:20	1	2	146	1	05/10/2014	7929	1	2	1	2	11.20	0.00			72
Original	8	Ticket	4496	CASH	05/10/2014 19:58:37	1	2	359	4	05/10/2014	3518	1	2	1	2	14.10	0.00			126
Original	8	Ticket	4497	CASH	05/10/2014 19:59:31	1	2	226	4	05/10/2014	4236	1	2	1	2	2.60	0.00			
Original	8	Ticket	4498	CASH	05/10/2014 20:00:19	1	2	30	2	05/10/2014	1184	1	2	1	2	24.60	0.00			
Original	8	Ticket	4499	CASH	05/10/2014 20:00:51	1	2	266	1	05/10/2014	4043	1	2	1	2	2.60	0.00			
Original	8	Ticket	4500	CASH	05/10/2014 20:01:22	1	2	326	5	05/10/2014	847	1	2	1	2	8.80	0.00			
Original	8	Ticket	4501	CASH	05/10/2014 20:01:55	2	2	75	2	05/10/2014	6119	2	2	1	2	28.00	0.00			24
Original	8	Ticket	4502	CASH	05/10/2014 20:02:16	1	2	312	1	05/10/2014	6776	1	2	1	2	6.45	0.00			
Original	8	Ticket	4503	CASH	05/10/2014 20:02:43	1	2	226	4	05/10/2014	4240	1	2	1	2	2.60	0.00			
Original	8	Ticket	4504	CASH	05/10/2014 20:03:11	1	2	326	1	05/10/2014	5638	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4505	CASH	05/10/2014 20:03:36	1	2	286	2	05/10/2014	4405	1	2	1	2	4.00	0.00			72
Original	8	Ticket	4506	CASH	05/10/2014 20:04:00	2	3	146	2	05/10/2014	8544	2	3	2	3	16.50	0.00			
Original	8	Ticket	4507	CASH	05/10/2014 20:04:21	1	2	236	3	05/10/2014	6939	1	2	1	2	2.05	0.00			
Original	8	Ticket	4508	CASH	05/10/2014 20:04:50	1	2	326	5	05/10/2014	1024	1	2	1	2	8.80	0.00			
Original	8	Ticket	4509	CASH	05/10/2014 20:05:10	1	2	242	1	05/10/2014	969	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4510	CASH	05/10/2014 20:05:47	1	2	266	1	05/10/2014	4048	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	4511	CASH	05/10/2014 20:06:05	1	2	326	5	05/10/2014	1041	1	2	1	2	8.80	0.00			
Original	8	Ticket	4512	CASH	05/10/2014 20:06:38	1	2	242	1	05/10/2014	973	1	2	1	2	1.60	0.00			
Original	8	Ticket	4513	CASH	05/10/2014 20:07:26	1	2	266	1	05/10/2014	4051	1	2	1	2	0.00	2.60			62 115 116 120
Original	8	Ticket	4514	CASH	05/10/2014 20:09:18	1	2	312	3	05/10/2014	1079	1	2	1	2	6.45	0.00			
Original	8	Ticket	4515	CASH	05/10/2014 20:09:43	1	2	312	3	05/10/2014	1084	1	2	1	2	6.45	0.00			
Original	8	Ticket	4516	CASH	05/10/2014 20:11:02	1	2	236	3	05/10/2014	6945	1	2	1	2	2.05	0.00			
Original	8	Ticket	4517	CASH	05/10/2014 20:11:21	1	2	180	2	05/10/2014	6448	1	2	1	2	7.80	0.00			
Original	8	Ticket	4518	CASH	05/10/2014 20:12:28	1	2	339	4	05/10/2014	7740	1	2	1	2	10.75	0.00			
Original	8	Ticket	4519	CASH	05/10/2014 20:13:23	1	2	326	5	05/10/2014	1070	1	2	1	2	8.80	0.00			
Original	8	Ticket	4520	CASH	05/10/2014 20:13:45	1	2	242	1	05/10/2014	979	1	2	1	2	1.60	0.00			
Original	8	Ticket	4521	CASH	05/10/2014 20:14:07	1	2	242	1	05/10/2014	977	1	2	1	2	1.60	0.00			
Original	8	Ticket	4522	CASH	05/10/2014 20:14:25	1	2	326	5	05/10/2014	1079	1	2	1	2	8.80	0.00			
Original	8	Ticket	4523	CASH	05/10/2014 20:14:50	1	2	226	4	05/10/2014	4264	1	2	1	2	2.60	0.00			
Original	8	Ticket	4524	CASH	05/10/2014 20:15:17	1	2	298	1	05/10/2014	5222	1	2	1	2	4.95	0.00			
Original	8	Ticket	4525	CASH	05/10/2014 20:15:38	1	2	39	3	05/10/2014	2560	1	2	1	2	23.10	0.00			
Original	8	Ticket	4526	CASH	05/10/2014 20:15:53	2	2	242	1	05/10/2014	981	2	2	1	2	1.60	0.00			24 72

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4527	CASH	05/10/2014 20:16:14	1	2	236	3	05/10/2014	6954	1	2	1	2	$2.05	$0.00			
Original	8	Ticket	4528	CASH	05/10/2014 20:17:07	1	2	326	5	05/10/2014	1096	1	2	1	2	8.80	0.00			
Original	8	Ticket	4529	CASH	05/10/2014 20:17:27	1	2	266	3	05/10/2014	2855	1	2	1	2	2.60	0.00			
Original	8	Ticket	4530	CASH	05/10/2014 20:17:45	1	2	242	1	05/10/2014	984	1	2	1	2	1.60	0.00			
Original	8	Ticket	4531	CASH	05/10/2014 20:17:59	1	2	351	5	05/10/2014	2433	1	2	1	2	12.60	0.00			
Original	8	Ticket	4532	CASH	05/10/2014 20:19:24	1	2	359	4	05/10/2014	3539	1	2	1	2	14.10	0.00			
Original	8	Ticket	4533	CASH	05/10/2014 20:20:04	1	2	326	5	05/10/2014	1015	1	2	1	2	8.80	0.00			
Original	8	Ticket	4534	CASH	05/10/2014 20:20:39	1	2	236	3	05/10/2014	6960	1	2	1	2	2.05	0.00			
Original	8	Ticket	4535	CASH	05/10/2014 20:21:04	2	3	266	3	05/10/2014	2857	2	4	2	3	3.55	0.00			
Original	8	Ticket	4536	CASH	05/10/2014 20:22:24	1	2	242	1	05/10/2014	989	1	2	1	2	1.60	0.00			
Original	8	Ticket	4537	CASH	05/10/2014 20:22:36	1	2	242	3	05/10/2014	216	1	2	1	2	1.60	0.00			
Original	8	Ticket	4538	CASH	05/10/2014 20:23:33	1	2	180	2	05/10/2014	6451	1	2	1	2	7.80	0.00			
Original	8	Ticket	4539	CASH	05/10/2014 20:24:00	1	2	312	3	05/10/2014	1109	1	2	1	2	6.45	0.00			
Original	8	Ticket	4540	CASH	05/10/2014 20:25:00	1	2	312	3	05/10/2014	1097	1	2	1	2	6.45	0.00			
Original	8	Ticket	4541	CASH	05/10/2014 20:26:19	1	2	326	5	05/10/2014	1091	1	2	1	2	8.80	0.00			
Original	8	Ticket	4542	CASH	05/10/2014 20:27:36	1	2	351	3	05/10/2014	6314	1	2	1	2	12.60	0.00			
Original	8	Ticket	4543	CASH	05/10/2014 20:28:09	1	2	286	3	05/10/2014	8012	1	2	1	2	4.00	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4544	CASH	05/10/2014 20:28:36	1	2	242	1	05/10/2014	995	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4545	CASH	05/10/2014 20:29:01	1	2	326	5	05/10/2014	1170	1	2	1	2	8.80	0.00			
Original	8	Ticket	4546	CASH	05/10/2014 20:29:21	1	2	339	4	05/10/2014	7786	1	2	1	2	10.75	0.00			
Original	8	Ticket	4547	CASH	05/10/2014 20:30:19	1	2	146	1	05/10/2014	8044	1	2	1	2	11.20	0.00			
Original	8	Ticket	4548	CASH	05/10/2014 20:31:02	1	2	75	4	05/10/2014	3041	1	2	1	2	19.35	0.00			
Original	8	Ticket	4549	CASH	05/10/2014 20:31:33	1	2	242	1	05/10/2014	997	1	2	1	2	1.60	0.00			
Original	8	Ticket	4550	CASH	05/10/2014 20:31:46	1	2	326	3	05/10/2014	3872	1	2	1	2	8.80	0.00			
Original	8	Ticket	4551	CASH	05/10/2014 20:32:05	1	2	326	5	05/10/2014	1140	1	2	1	2	8.80	0.00			
Original	8	Ticket	4552	CASH	05/10/2014 20:32:28	1	2	226	1	05/10/2014	1679	1	2	1	2	2.60	0.00			
Original	8	Ticket	4553	CASH	05/10/2014 20:32:42	1	2	266	1	05/10/2014	4072	1	2	1	2	2.60	0.00			126
Original	8	Ticket	4554	CASH	05/10/2014 20:33:03	1	2	242	1	05/10/2014	1000	1	2	1	2	1.60	0.00			
Original	8	Ticket	4555	CASH	05/10/2014 20:33:20	1	2	75	2	05/10/2014	6107	1	2	1	2	19.35	0.00			72
Original	8	Ticket	4556	CASH	05/10/2014 20:33:41	1	2	326	5	05/10/2014	1159	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4557	CASH	05/10/2014 20:34:04	1	2	146	1	05/10/2014	8059	1	2	1	2	11.20	0.00			
Original	8	Ticket	4558	CASH	05/10/2014 20:34:32	1	2	326	5	05/10/2014	1001	1	2	1	2	8.80	0.00			
Original	8	Ticket	4559	CASH	05/10/2014 20:34:50	1	2	75	4	05/10/2014	2974	1	2	1	2	19.35	0.00			
Original	8	Ticket	4560	CASH	05/10/2014 20:35:40	1	2	242	1	05/10/2014	1003	1	2	1	2	1.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4561	CASH	05/10/2014 20:36:06	1	2	326	5	05/10/2014	1207	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4562	CASH	05/10/2014 20:36:44	1	2	339	1	05/10/2014	2748	1	2	1	2	10.75	0.00			
Original	8	Ticket	4563	CASH	05/10/2014 20:37:36	1	2	75	4	05/10/2014	2909	1	2	1	2	19.35	0.00			
Original	8	Ticket	4564	CASH	05/10/2014 20:38:07	1	2	326	5	05/10/2014	1173	1	2	1	2	8.80	0.00			
Original	8	Ticket	4565	CASH	05/10/2014 20:38:25	1	2	226	3	05/10/2014	4821	1	2	1	2	2.60	0.00			126
Original	8	Ticket	4566	CASH	05/10/2014 20:39:34	1	2	312	1	05/10/2014	6846	1	2	1	2	6.45	0.00			
Original	8	Ticket	4567	CASH	05/10/2014 20:39:52	1	2	236	3	05/10/2014	6979	1	2	1	2	2.05	0.00			72
Original	8	Ticket	4568	CASH	05/10/2014 20:40:51	1	2	30	3	05/10/2014	2027	1	2	1	2	24.60	0.00			
Original	8	Ticket	4569	CASH	05/10/2014 20:42:24	1	2	242	1	05/10/2014	1010	1	2	1	2	1.60	0.00			
Original	8	Ticket	4570	CASH	05/10/2014 20:43:14	1	2	226	4	05/10/2014	4289	1	2	1	2	2.60	0.00			
Original	8	Ticket	4571	CASH	05/10/2014 20:43:46	1	2	266	3	05/10/2014	2898	1	2	1	2	2.60	0.00			
Original	8	Ticket	4572	CASH	05/10/2014 20:44:29	1	2	266	1	05/10/2014	4094	1	2	1	2	2.60	0.00			
Original	8	Ticket	4573	CASH	05/10/2014 20:45:52	1	2	326	5	05/10/2014	1160	1	2	1	2	8.80	0.00			
Original	8	Ticket	4574	CASH	05/10/2014 20:46:31	1	2	236	3	05/10/2014	6983	1	2	1	2	2.05	0.00			101
Original	8	Ticket	4575	CASH	05/10/2014 20:47:03	1	2	298	1	05/10/2014	5272	1	2	1	2	4.95	0.00			
Original	8	Ticket	4576	CASH	05/10/2014 20:48:16	1	2	180	2	05/10/2014	6453	1	2	1	2	7.80	0.00			
Original	8	Ticket	4577	CASH	05/10/2014 20:48:54	1	2	333	3	05/10/2014	8398	1	2	1	2	9.70	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4578	CASH	05/10/2014 20:49:13	1	2	266	3	05/10/2014	2918	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	4579	CASH	05/10/2014 20:49:38	1	2	146	2	05/10/2014	8683	1	2	1	2	11.20	0.00			
Original	8	Ticket	4580	CASH	05/10/2014 20:50:03	1	2	75	2	05/10/2014	6172	1	2	1	2	19.35	0.00			
Original	8	Ticket	4581	CASH	05/10/2014 20:51:20	1	2	30	1	05/10/2014	4973	1	2	1	2	24.60	0.00			
Original	8	Ticket	4582	CASH	05/10/2014 20:52:39	1	2	266	1	05/10/2014	4090	1	2	1	2	2.60	0.00			
Original	8	Ticket	4583	CASH	05/10/2014 20:53:07	1	2	201	2	05/10/2014	4372	1	2	1	2	4.95	0.00			
Original	8	Ticket	4584	CASH	05/10/2014 20:53:25	1	2	326	5	05/10/2014	1212	1	2	1	2	8.80	0.00			
Original	8	Ticket	4585	CASH	05/10/2014 20:54:00	1	2	312	1	05/10/2014	6864	1	2	1	2	6.45	0.00			
Original	8	Ticket	4586	CASH	05/10/2014 20:54:41	1	2	312	3	05/10/2014	1161	1	2	1	2	6.45	0.00			
Original	8	Ticket	4587	CASH	05/10/2014 20:56:42	1	2	326	5	05/10/2014	1275	1	2	1	2	8.80	0.00			
Original	8	Ticket	4588	CASH	05/10/2014 20:57:23	1	2	326	5	05/10/2014	1251	1	2	1	2	8.80	0.00			126
Original	8	Ticket	4589	CASH	05/10/2014 20:58:10	1	2	236	3	05/10/2014	6989	1	2	1	2	2.05	0.00			
Original	8	Ticket	4590	CASH	05/10/2014 20:59:12	1	2	266	3	05/10/2014	2934	1	2	1	2	2.60	0.00			
Original	8	Ticket	4591	CASH	05/10/2014 20:59:56	1	2	326	5	05/10/2014	1266	1	2	1	2	8.80	0.00			
Original	8	Ticket	4592	CASH	05/10/2014 21:00:23	1	2	57	3	05/10/2014	73	1	2	1	2	21.30	0.00			72
Original	8	Ticket	4593	CASH	05/10/2014 21:01:10	1	2	326	5	05/10/2014	1271	1	2	1	2	8.80	0.00			
Original	8	Ticket	4594	CASH	05/10/2014 21:01:32	1	2	326	5	05/10/2014	1151	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4595	CASH	05/10/2014 21:02:00	1	2	266	1	05/10/2014	4124	1	2	1	2	$2.60	$0.00			
Original	8	Ticket	4596	CASH	05/10/2014 21:02:35	1	2	266	1	05/10/2014	4123	1	2	1	2	2.60	0.00			
Original	8	Ticket	4597	CASH	05/10/2014 21:02:58	1	2	326	5	05/10/2014	1291	1	2	1	2	8.80	0.00			
Original	8	Ticket	4598	CASH	05/10/2014 21:03:39	1	2	242	1	05/10/2014	1034	1	2	1	2	1.60	0.00			
Original	8	Ticket	4599	CASH	05/10/2014 21:03:58	1	2	226	2	05/10/2014	951	1	2	1	2	2.60	0.00			
Original	8	Ticket	4600	CASH	05/10/2014 21:05:32	1	2	0	0		0	0	0	1	2	24.60	0.00			64 72 96
Original	8	Ticket	4601	CASH	05/10/2014 21:06:08	1	2	57	3	05/10/2014	74	1	2	1	2	21.30	0.00			72
Original	8	Ticket	4602	CASH	05/10/2014 21:06:31	1	2	266	1	05/10/2014	4129	1	2	1	2	2.60	0.00			126
Original	8	Ticket	4603	CASH	05/10/2014 21:07:02	1	2	242	1	05/10/2014	1036	1	2	1	2	1.60	0.00			
Original	8	Ticket	4604	CASH	05/10/2014 21:09:19	1	2	242	1	05/10/2014	1038	1	2	1	2	1.60	0.00			
Original	8	Ticket	4605	CASH	05/10/2014 21:09:57	1	2	161	3	05/10/2014	5782	1	2	1	2	9.25	0.00			
Original	8	Ticket	4606	CASH	05/10/2014 21:10:48	1	2	312	1	05/10/2014	6893	1	2	1	2	6.45	0.00			
Original	8	Ticket	4607	CASH	05/10/2014 21:11:48	1	2	266	3	05/10/2014	2955	1	2	1	2	2.60	0.00			
Original	8	Ticket	4608	CASH	05/10/2014 21:12:08	1	2	326	5	05/10/2014	1315	1	2	1	2	8.80	0.00			
Original	8	Ticket	4609	CASH	05/10/2014 21:12:43	1	2	286	3	05/10/2014	8070	1	2	1	2	4.00	0.00			
Original	8	Ticket	4610	CASH	05/10/2014 21:13:03	1	2	57	3	05/10/2014	155	1	2	1	2	21.30	0.00			72
Original	8	Ticket	4611	CASH	05/10/2014 21:13:53	1	2	226	1	05/10/2014	1702	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4612	CASH	05/10/2014 21:14:34	1	2	146	1	05/10/2014	8124	1	2	1	2	$11.20	$0.00			
Original	8	Ticket	4647	CASH	05/10/2014 21:34:58	1	2	312	3	05/10/2014	1231	1	2	1	2	6.45	0.00			
Original	8	Ticket	4648	CASH	05/10/2014 21:35:35	1	2	326	5	05/10/2014	1520	1	2	1	2	8.80	0.00			
Original	8	Ticket	4649	CASH	05/10/2014 21:35:58	1	2	161	3	05/10/2014	5823	1	2	1	2	9.25	0.00			72
Original	8	Ticket	4650	CASH	05/10/2014 21:36:22	1	2	242	1	05/10/2014	1067	1	2	1	2	1.60	0.00			
Original	8	Ticket	4651	CASH	05/10/2014 21:36:40	1	2	226	2	05/10/2014	977	1	2	1	2	2.60	0.00			
Original	8	Ticket	4652	CASH	05/10/2014 21:37:02	1	2	286	3	05/10/2014	8097	1	2	1	2	4.00	0.00			
Original	8	Ticket	4653	CASH	05/10/2014 21:38:00	1	2	326	5	05/10/2014	1496	1	2	1	2	8.80	0.00			
Original	8	Ticket	4654	CASH	05/10/2014 21:38:22	1	2	242	3	05/10/2014	257	1	2	1	2	1.60	0.00			126
Original	8	Ticket	4655	CASH	05/10/2014 21:39:26	1	2	312	1	05/10/2014	6915	1	2	1	2	6.45	0.00			
Original	8	Ticket	4656	CASH	05/10/2014 21:39:50	1	2	236	3	05/10/2014	7009	1	2	1	2	2.05	0.00			
Original	8	Ticket	4657	CASH	05/10/2014 21:40:11	1	2	226	2	05/10/2014	981	1	2	1	2	2.60	0.00			126
Original	8	Ticket	4658	CASH	05/10/2014 21:40:47	1	2	266	3	05/10/2014	2985	1	2	1	2	2.60	0.00			
Original	8	Ticket	4659	CASH	05/10/2014 21:41:39	1	2	242	1	05/10/2014	1074	1	2	1	2	1.60	0.00			
Original	8	Ticket	4660	CASH	05/10/2014 21:41:58	1	2	326	5	05/10/2014	1487	1	2	1	2	8.80	0.00			
Original	8	Ticket	4661	CASH	05/10/2014 21:42:32	1	2	242	1	05/10/2014	1076	1	2	1	2	1.60	0.00			
Original	8	Ticket	4662	CASH	05/10/2014 21:43:43	1	2	326	5	05/10/2014	1536	1	2	1	2	8.80	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4663	CASH	05/10/2014 21:44:06	1	2	326	5	05/10/2014	1494	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4664	CASH	05/10/2014 21:44:42	1	2	326	5	05/10/2014	1516	1	2	1	2	8.80	0.00			
Original	8	Ticket	4665	CASH	05/10/2014 21:45:14	1	2	236	3	05/10/2014	7019	1	2	1	2	2.05	0.00			
Original	8	Ticket	4666	CASH	05/10/2014 21:49:02	1	2	326	5	05/10/2014	1533	1	2	1	2	8.80	0.00			
Original	8	Ticket	4667	CASH	05/10/2014 21:49:30	1	2	242	1	05/10/2014	1082	1	2	1	2	1.60	0.00			72
Original	8	Ticket	4668	CASH	05/10/2014 21:49:55	1	2	146	1	05/10/2014	8153	1	2	1	2	11.20	0.00			
Original	8	Ticket	4669	CASH	05/10/2014 21:50:23	1	2	326	5	05/10/2014	1380	1	2	1	2	8.80	0.00			
Original	8	Ticket	4670	CASH	05/10/2014 21:51:22	1	2	226	4	05/10/2014	4322	1	2	1	2	2.60	0.00			
Original	8	Ticket	4671	CASH	05/10/2014 21:52:38	5	5	226	1	05/10/2014	1725	5	5	4	5	6.95	0.00			24 72
Original	8	Ticket	4672	CASH	05/10/2014 21:53:35	1	2	326	5	05/10/2014	1586	1	2	1	2	8.80	0.00			126
Original	8	Ticket	4673	CASH	05/10/2014 21:54:02	1	2	146	2	05/10/2014	8840	1	2	1	2	11.20	0.00			
Original	8	Ticket	4674	CASH	05/10/2014 21:56:33	1	2	326	5	05/10/2014	1591	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4675	CASH	05/10/2014 21:57:12	1	2	48	1	05/10/2014	417	1	2	1	2	22.20	0.00			
Original	8	Ticket	4676	CASH	05/10/2014 21:57:43	1	2	226	4	05/10/2014	4323	1	2	1	2	2.60	0.00			
Original	8	Ticket	4677	CASH	05/10/2014 21:58:06	2	4	326	5	05/10/2014	1608	2	4	2	4	12.60	0.00			72
Original	8	Ticket	4678	CASH	05/10/2014 21:58:41	1	2	326	6	05/10/2014	4367	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4679	CASH	05/10/2014 21:59:21	1	2	286	2	05/10/2014	4643	1	2	1	2	4.00	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4680	CASH	05/10/2014 21:59:34	1	2	298	1	05/10/2014	5364	1	2	1	2	$4.95	$0.00			
Original	8	Ticket	4681	CASH	05/10/2014 22:00:21	1	2	286	2	05/10/2014	4638	1	2	1	2	4.00	0.00			
Original	8	Ticket	4682	CASH	05/10/2014 22:00:40	1	2	242	1	05/10/2014	1091	1	2	1	2	1.60	0.00			
Original	8	Ticket	4683	CASH	05/10/2014 22:01:08	1	2	326	5	05/10/2014	1632	1	2	1	2	8.80	0.00			
Original	8	Ticket	4684	CASH	05/10/2014 22:01:38	1	2	312	3	05/10/2014	1261	1	2	1	2	6.45	0.00			
Original	8	Ticket	4685	CASH	05/10/2014 22:01:58	1	2	242	1	05/10/2014	1092	1	2	1	2	1.60	0.00			
Original	8	Ticket	4686	CASH	05/10/2014 22:02:42	2	3	286	2	05/10/2014	4647	2	3	2	3	5.90	0.00			
Original	8	Ticket	4687	CASH	05/10/2014 22:04:02	1	2	326	3	05/10/2014	4079	1	2	1	2	8.80	0.00			
Original	8	Ticket	4688	CASH	05/10/2014 22:04:37	1	2	242	1	05/10/2014	1094	1	2	1	2	1.60	0.00			
Original	8	Ticket	4689	CASH	05/10/2014 22:05:21	1	2	226	2	05/10/2014	1003	1	2	1	2	2.60	0.00			
Original	8	Ticket	4690	CASH	05/10/2014 22:05:54	1	2	326	5	05/10/2014	1629	1	2	1	2	8.80	0.00			
Original	8	Ticket	4691	CASH	05/10/2014 22:07:11	1	2	226	4	05/10/2014	4329	1	2	1	2	2.60	0.00			
Original	8	Ticket	4692	CASH	05/10/2014 22:07:45	1	2	75	2	05/10/2014	6386	1	2	1	2	19.35	0.00			126
Original	8	Ticket	4693	CASH	05/10/2014 22:08:09	1	2	326	5	05/10/2014	1661	1	2	1	2	8.80	0.00			
Original	8	Ticket	4694	CASH	05/10/2014 22:09:22	1	2	242	1	05/10/2014	1097	1	2	1	2	1.60	0.00			
Original	8	Ticket	4695	CASH	05/10/2014 22:10:45	1	2	326	5	05/10/2014	1571	1	2	1	2	8.80	0.00			
Original	8	Ticket	4696	CASH	05/10/2014 22:11:35	1	2	75	4	05/10/2014	3226	1	2	1	2	19.35	0.00			126

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4697	CASH	05/10/2014 22:12:12	1	2	242	1	05/10/2014	1099	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4698	CASH	05/10/2014 22:12:42	1	2	343	1	05/10/2014	252	1	2	1	2	11.65	0.00			
Original	8	Ticket	4699	CASH	05/10/2014 22:13:00	1	2	146	1	05/10/2014	8253	1	2	1	2	11.20	0.00			
Original	8	Ticket	4700	CASH	05/10/2014 22:16:20	1	2	359	4	05/10/2014	3798	1	2	1	2	14.10	0.00			126
Original	8	Ticket	4701	CASH	05/10/2014 22:16:55	1	2	242	1	05/10/2014	1102	1	2	1	2	1.60	0.00			
Original	8	Ticket	4702	CASH	05/10/2014 22:19:01	1	2	333	5	05/10/2014	2443	1	2	1	2	9.70	0.00			
Original	8	Ticket	4703	CASH	05/10/2014 22:20:34	1	2	326	5	05/10/2014	1691	1	2	1	2	8.80	0.00			
Original	8	Ticket	4704	CASH	05/10/2014 22:21:20	1	2	242	1	05/10/2014	1106	1	2	1	2	1.60	0.00			
Original	8	Ticket	4705	CASH	05/10/2014 22:22:06	1	2	326	5	05/10/2014	1713	1	2	1	2	8.80	0.00			72
Original	8	Ticket	4706	CASH	05/10/2014 22:22:27	1	2	298	1	05/10/2014	5398	1	2	1	2	4.95	0.00			
Original	8	Ticket	4707	CASH	05/10/2014 22:22:59	1	2	326	5	05/10/2014	1751	1	2	1	2	8.80	0.00			
Original	8	Ticket	4708	CASH	05/10/2014 22:23:41	1	2	333	3	05/10/2014	8458	1	2	1	2	9.70	0.00			
Original	8	Ticket	4709	CASH	05/10/2014 22:24:09	1	2	236	3	05/10/2014	7037	1	2	1	2	2.05	0.00			101
Original	8	Ticket	4710	CASH	05/10/2014 22:24:18	1	2	242	1	05/10/2014	1108	1	2	1	2	1.60	0.00			
Original	8	Ticket	4711	CASH	05/10/2014 22:24:36	1	2	266	1	05/10/2014	4203	1	2	1	2	2.60	0.00			
Original	8	Ticket	4712	CASH	05/10/2014 22:25:06	1	2	242	1	05/10/2014	1109	1	2	1	2	0.00	1.60			62 115 120
Original	8	Ticket	4713	CASH	05/10/2014 22:26:05	1	2	312	1	05/10/2014	7000	1	2	1	2	6.45	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4714	CASH	05/10/2014 22:26:47	1	2	326	5	05/10/2014	1499	1	2	1	2	$8.80	$0.00			
Original	8	Ticket	4715	CASH	05/10/2014 22:28:17	1	2	326	5	05/10/2014	1776	1	2	1	2	8.80	0.00			
Original	8	Ticket	4716	CASH	05/10/2014 22:28:54	1	2	242	1	05/10/2014	1116	1	2	1	2	1.60	0.00			
Original	8	Ticket	4717	CASH	05/10/2014 22:29:45	1	2	326	3	05/10/2014	4145	1	2	1	2	8.80	0.00			
Original	8	Ticket	4718	CASH	05/10/2014 22:31:22	1	2	57	3	05/10/2014	769	1	2	1	2	21.30	0.00			
Original	8	Ticket	4719	CASH	05/10/2014 22:32:17	1	2	286	2	05/10/2014	4701	1	2	1	2	4.00	0.00			72
Original	8	Ticket	4720	CASH	05/10/2014 22:32:45	1	2	236	3	05/10/2014	7040	1	2	1	2	2.05	0.00			
Original	8	Ticket	4721	CASH	05/10/2014 22:33:46	1	2	242	1	05/10/2014	1124	1	2	1	2	1.60	0.00			
Original	8	Ticket	4722	CASH	05/10/2014 22:34:30	1	2	326	5	05/10/2014	1662	1	2	1	2	8.80	0.00			
Original	8	Ticket	4723	CASH	05/10/2014 22:35:58	1	2	326	5	05/10/2014	1671	1	2	1	2	8.80	0.00			126
Original	8	Ticket	4724	CASH	05/10/2014 22:36:43	1	2	226	4	05/10/2014	4343	1	2	1	2	2.60	0.00			
Original	8	Ticket	4725	CASH	05/10/2014 22:37:12	1	2	226	4	05/10/2014	4345	1	2	1	2	2.60	0.00			
Original	8	Ticket	4726	CASH	05/10/2014 22:38:30	1	2	242	2	05/10/2014	2916	1	2	1	2	1.60	0.00			126
Original	8	Ticket	4727	CASH	05/10/2014 22:39:42	1	2	0	0		0	0	0	1	2	24.60	0.00			64 72 96
Original	8	Ticket	4728	CASH	05/10/2014 22:41:38	1	2	298	1	05/10/2014	5418	1	2	1	2	4.95	0.00			
Original	8	Ticket	4729	NONR	05/10/2014 22:43:04	1	2	247	4	05/10/2014	1766	1	2	1	2	0.00		62000015909		53
Original	8	Ticket	4730	CASH	05/10/2014 22:43:29	1	2	226	2	05/10/2014	1031	1	2	1	2	2.60	0.00			

Detailed Exit Transaction

Road Information
Highway: **Toll 76-276**
Interchange: **05 019 HES**

Collector Information
Number: **2306**
Name: **Fulginiti, Joseph F.**

Tour of Duty
Start: **05/10/2014 14:50:47**
End: **05/10/2014 22:51:54**

Total Records Shown: **740**

05 019 HES

	Exit							Entry												
Adjust-ment Status	Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	MP	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
Original	8	Ticket	4731	CASH	05/10/2014 22:44:30	1	2	242	1	05/10/2014	1131	1	2	1	2	$1.60	$0.00			
Original	8	Ticket	4732	CASH	05/10/2014 22:44:59	1	2	242	1	05/10/2014	1132	1	2	1	2	1.60	0.00			
Original	8	Ticket	4733	CASH	05/10/2014 22:45:15	1	2	326	5	05/10/2014	1779	1	2	1	2	8.80	0.00			
Original	8	Ticket	4734	CASH	05/10/2014 22:45:41	1	2	326	5	05/10/2014	1739	1	2	1	2	8.80	0.00			
Original	8	Ticket	4735	CASH	05/10/2014 22:46:09	1	2	326	5	05/10/2014	1842	1	2	1	2	8.80	0.00			
Original	8	Ticket	4736	CASH	05/10/2014 22:47:16	1	2	242	1	05/10/2014	1135	1	2	1	2	1.60	0.00			
Original	8	Ticket	4737	CASH	05/10/2014 22:48:29	1	2	326	5	05/10/2014	1807	1	2	1	2	8.80	0.00			
Original	8	Ticket	4738	CASH	05/10/2014 22:49:16	1	2	236	1	05/10/2014	951	1	2	1	2	2.05	0.00			
Original	8	Ticket	4739	CASH	05/10/2014 22:50:42	1	2	226	4	05/10/2014	4350	1	2	1	2	2.60	0.00			
Original	8	Ticket	4740	CASH	05/10/2014 22:51:09	1	2	226	4	05/10/2014	4351	1	2	1	2	2.60	0.00			
															Total :	**$5,369.55**	**$13.90**			

~ End of Report ~

CRTH1655DetTxn_T

Detailed Transactions (Date/Time Range)

Road Information
Highway: Toll 76-276, Toll 476
Interchange: 05 008 NST
Exit Lane: (All)

Data Availability
ETC: N/A
Audit Status: Audited

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

TRANSACTION COUNT: 32 **NOT COUNT: 0** **TRANSACTION TOTAL: 32**

EXIT											ENTRY					
Fare Collection System	Correlation Type	Date / Time	Agency	Transponder/ Card Number	Trans Number	Fare	Lane	Class	Axles	Not Count	MP Interchange	Date / Time	Trans Number	Lane	Class	Axles
ETC	Normal	05/01/2014 00:00:09	006	01743662	4263	$1.72	5	1	2		057 Pittsburgh	04/30/2014 23:44:17	2896	4	1	2
ETC	Normal	05/01/2014 00:01:47	006	02610860	4264	2.43	5	1	2		048 Allegheny Valley	04/30/2014 23:36:43	7120	3	1	2
ETC	Normal	05/01/2014 00:01:56	004	03402389	4265	35.87	5	5	4		226 Carlisle	04/30/2014 21:30:46	4909	1	4	4
ETC	Normal	05/01/2014 00:03:33	006	00860415	4266	1.72	5	1	2		057 Pittsburgh	04/30/2014 23:47:18	1335	1	1	2
ETC	Normal	05/01/2014 00:04:30	006	01864615	4267	1.72	5	1	2		057 Pittsburgh	04/30/2014 23:44:13	1329	1	1	2
ETC	Normal	05/01/2014 00:04:57	006	00273801	4268	2.08	5	5	5		067 Irwin	04/30/2014 23:54:32	2418	1	5	5
Subtotal for lane 5:						**$45.54**										

Detailed Transactions (Date/Time Range)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 008 NST**
Exit Lane: **(All)**

Data Availability
ETC: **N/A**
Audit Status: **Audited**

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

EXIT											ENTRY					
Fare Collection System	Correlation Type	Date / Time	Agency	Transponder/ Card Number	Trans Number	Fare	Lane	Class	Axles	Not Count	MP Interchange	Date / Time	Trans Number	Lane	Class	Axles
ETC	Normal	05/01/2014 00:02:00	006	01762454	791	$1.72	6	1	2		057 Pittsburgh	04/30/2014 23:44:19	1331	1	1	2
ETC	Normal	05/01/2014 00:03:05	006	00936930	792	15.87	6	6	4		030 Warrendale	04/30/2014 23:15:07	708	7	5	4
ETC	Normal	05/01/2014 00:03:37	004	03443203	793	15.87	6	6	5		030 Warrendale	04/30/2014 23:19:13	723	7	6	5
Subtotal for lane 6:						**$33.46**										

Detailed Transactions (Date/Time Range)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 008 NST**
Exit Lane: **(All)**

Data Availability
ETC: **N/A**
Audit Status: **Audited**

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

EXIT											ENTRY					
Fare Collection System	Correlation Type	Date / Time	Agency	Transponder/ Card Number	Trans Number	Fare	Lane	Class	Axles	Not Count	MP Interchange	Date / Time	Trans Number	Lane	Class	Axles
Non-ETC	Cash	05/01/2014 00:00:18			6223	$37.15	7	6	5		161 Breezewood	04/30/2014 22:13:14	342	3	6	5
Non-ETC	Non-Revenue	05/01/2014 00:01:38		65018969815	6224	0.00	7	1	2		048 Allegheny Valley	04/23/2014 23:54:06	6374	4	1	2
Non-ETC	Cash	05/01/2014 00:03:13			6225	71.15	7	6	5		247 Harrisburg East	04/30/2014 21:15:45	3323	1	6	5
Non-ETC	Cash	05/01/2014 00:04:01			6226	10.20	7	1	2		161 Breezewood	04/30/2014 22:42:48	379	3	1	2
Non-ETC	Cash	05/01/2014 00:04:31			6227	3.55	7	1	2		048 Allegheny Valley	04/30/2014 23:37:43	6716	4	1	2
Non-ETC	Cash	05/01/2014 00:04:49			6228	31.40	7	1	2		351 Bensalem	04/30/2014 18:14:16	3189	5	1	2
Subtotal for lane 7:						**$153.45**										

Detailed Transactions (Date/Time Range)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 008 NST**
Exit Lane: **(All)**

Data Availability
ETC: **N/A**
Audit Status: **Audited**

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

EXIT											ENTRY					
Fare Collection System	Correlation Type	Date / Time	Agency	Transponder/ Card Number	Trans Number	Fare	Lane	Class	Axles	Not Count	MP Interchange	Date / Time	Trans Number	Lane	Class	Axles
Non-ETC	Cash	05/01/2014 00:00:13			6092	$40.45	8	2	5		326 Valley Forge	04/30/2014 19:14:26	7484	5	2	5
Non-ETC	Cash	05/01/2014 00:01:05			6093	10.20	8	1	2		161 Breezewood	04/30/2014 22:40:07	375	3	1	2
Non-ETC	Cash	05/01/2014 00:02:56			6094	0.00	8	0	0				0	0	0	0
Non-ETC	Cash	05/01/2014 00:03:23			6095	2.60	8	1	2		057 Pittsburgh	04/30/2014 23:41:29	1278	3	1	2
Non-ETC	Cash	05/01/2014 00:03:46			6096	22.70	8	1	2		286 Reading	04/30/2014 20:26:51	660	3	1	2
Non-ETC	Cash	05/01/2014 00:04:42			6097	53.90	8	7	5		161 Breezewood	04/30/2014 22:37:17	372	3	7	5
Subtotal for lane 8:						**$129.85**										

Detailed Transactions (Date/Time Range)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 008 NST**
Exit Lane: **(All)**

Data Availability
ETC: **N/A**
Audit Status: **Audited**

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

EXIT											ENTRY					
Fare Collection System	Correlation Type	Date / Time	Agency	Transponder/ Card Number	Trans Number	Fare	Lane	Class	Axles	Not Count	MP Interchange	Date / Time	Trans Number	Lane	Class	Axles
ETC	Normal	05/01/2014 00:01:13	019	00145966	2317	$23.11	9	1	2		359 Delaware River Bridge	04/30/2014 18:41:41	2351	3	1	2
ETC	Normal	05/01/2014 00:01:24	004	05224002	2318	48.29	9	6	5		236 Gettysburg Pike	04/30/2014 21:31:21	7	1	5	5
ETC	Normal	05/01/2014 00:02:22	006	02527531	2319	7.24	9	1	2		161 Breezewood	04/30/2014 22:29:41	8276	2	1	2
ETC	Normal	05/01/2014 00:02:28	006	02292179	2320	68.99	9	6	5		236 Gettysburg Pike	04/30/2014 21:26:53	6	1	7	5
ETC	Normal	05/01/2014 00:03:09	006	00835623	2321	15.87	9	6	5		030 Warrendale	04/30/2014 23:15:21	712	7	6	5
ETC	Normal	05/01/2014 00:04:10	004	05961579	2322	64.85	9	6	5		226 Carlisle	04/30/2014 21:33:22	4911	1	7	5
Subtotal for lane 9:						**$228.35**										

Detailed Transactions (Date/Time Range)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 008 NST**
Exit Lane: **(All)**

Data Availability
ETC: **N/A**
Audit Status: **Audited**

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

TRANSACTION COUNT: 32 **NOT COUNT: 0** **TRANSACTION TOTAL: 32**

EXIT											ENTRY					
Fare Collection System	Correlation Type	Date / Time	Agency	Transponder/ Card Number	Trans Number	Fare	Lane	Class	Axles	Not Count	MP Interchange	Date / Time	Trans Number	Lane	Class	Axles
ETC	Orphan Exit	05/01/2014 00:02:23	006	01925801	5641	$5.00	10	2	2		115 Wyoming Valley	05/01/2014 00:02:22		98		
ETC	Normal	05/01/2014 00:03:13	006	02136622	5642	1.04	10	1	2		067 Irwin	04/30/2014 23:54:59	2419	1	1	2
ETC	Normal	05/01/2014 00:03:43	004	06927854	5643	26.55	10	5	5		161 Breezewood	04/30/2014 22:39:51	8284	2	6	5
ETC	Normal	05/01/2014 00:04:11	015	05569341	5644	22.07	10	7	5		030 Warrendale	04/30/2014 23:18:00	720	7	6	5
ETC	Normal	05/01/2014 00:04:51	015	07332106	5645	45.53	10	6	5		226 Carlisle	04/30/2014 21:39:27	4923	3	6	5
Subtotal for lane 10:						**$100.19**										
Total:						**$690.84**										

~ End of Report ~

CRAS0119DumpsOutsShort

Dump Outstanding Shortages

This report does not include zero balance shortages

Reporting Period
05/01/2014
05/01/2014

District 1

Interchange	Collector Num	Collector Name	Shortage Date	Due Date	Shortage Amount	Amount Paid	Check Number	Date Paid	Exonerated
05 006 PIT									
	3008	Lagamba, Daniel S.	05/01/2014	06/20/2014	$7.30				No
				Collector Subtotal:	**$7.30**				
05 007 IRW									
	2007	Minnis, Montelle M.	05/01/2014	06/20/2014	$9.15				No
				Collector Subtotal:	**$9.15**				
				District 1 Subtotal:	**$16.45**				

~ End of Report ~

CRTH3310ExecSumTrfRev_D

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: (All)
District: (All)
Interchange: (All)

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period
05/01/2014
05/01/2014

TURNPIKE TOTALS

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	5,510	$5,962.22	7,865	$8,558.30	13,083	$14,225.06	26,458	$28,745.58	25,954	$28,156.28	1.94	2.09	26,458	$28,745.58
ETC Class 2 - 9	643	2,224.55	1,479	5,089.34	874	3,216.20	2,996	10,530.09	2,965	10,224.15	1.05	2.99	2,996	10,530.09
Non-ETC Class 1	1,559	2,585.49	3,443	5,772.69	5,127	8,555.97	10,129	16,914.15	9,408	15,697.80	7.66	7.75	10,129	16,914.15
Non-ETC Class 2 - 9	65	372.15	143	727.64	161	895.48	369	1,995.27	379	2,074.74	-2.64	-3.83	369	1,995.27
Totals:	**7,777**	**$11,144.41**	**12,930**	**$20,147.97**	**19,245**	**$26,892.71**	**39,952**	**$58,185.09**	**38,706**	**$56,152.97**	**3.22**	**3.62**	**39,952**	**$58,185.09**

Executive Summary Traffic & Revenue (Daily)

Road Information

Highway: (All)
District: (All)
Interchange: (All)

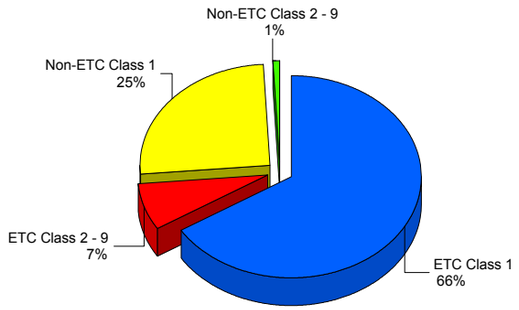
Data Availability

ETC: Correlated/Unadjusted
Audit Status: Audited

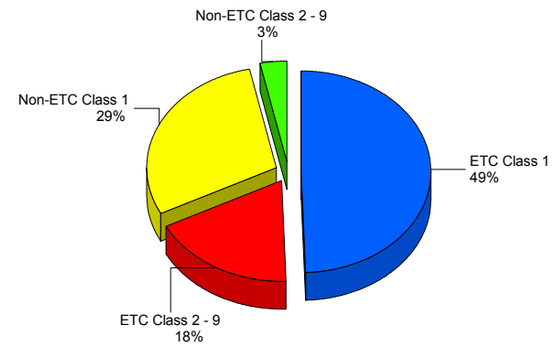
Reporting Period

05/01/2014
05/01/2014

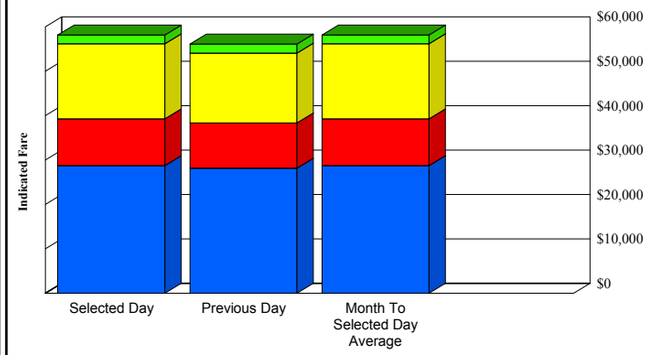
Selected Day Traffic Statistics

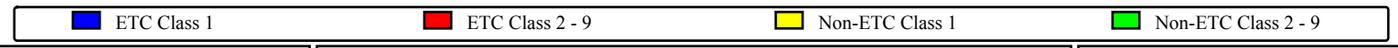


Selected Day Revenue Statistics

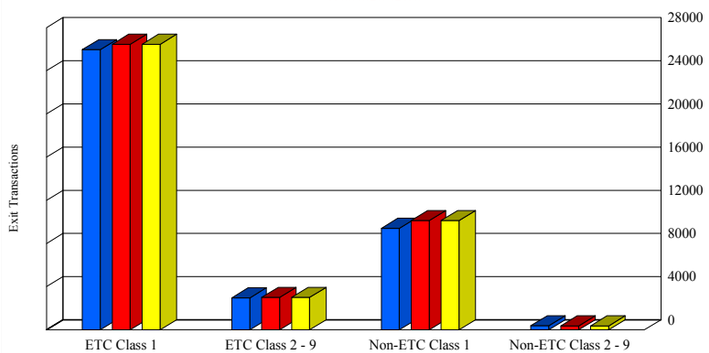


Revenue Comparison

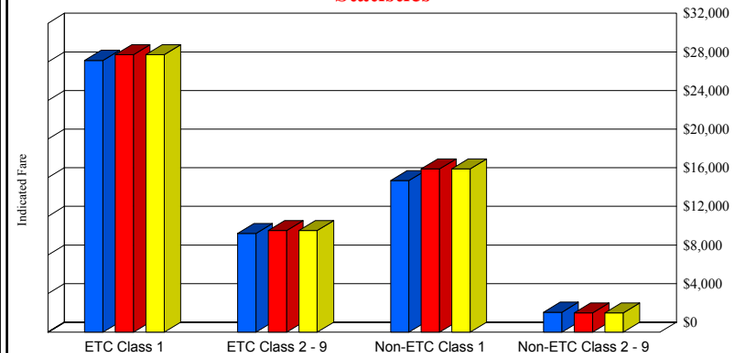




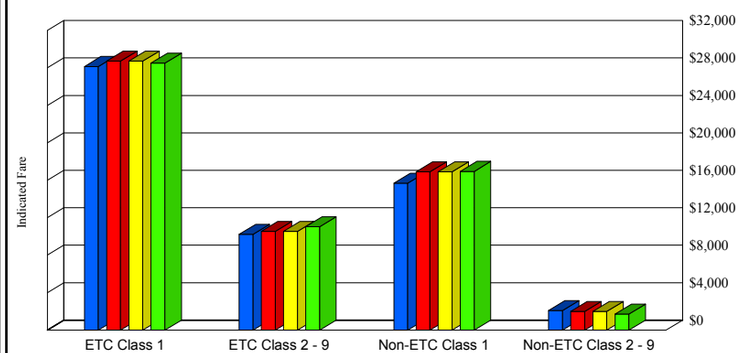
Selected Day Traffic Statistics

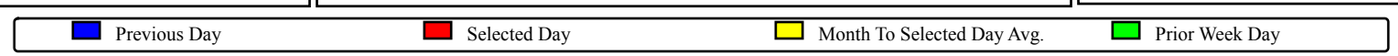


Selected Day Revenue Statistics



Revenue Statistics





Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

District 1

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	5,510	$5,962.22	7,865	$8,558.30	13,083	$14,225.06	26,458	$28,745.58	25,954	$28,156.28	1.94	2.09	26,458	$28,745.58
ETC Class 2 - 9	643	2,224.55	1,479	5,089.34	874	3,216.20	2,996	10,530.09	2,965	10,224.15	1.05	2.99	2,996	10,530.09
Non-ETC Class 1	1,559	2,585.49	3,443	5,772.69	5,127	8,555.97	10,129	16,914.15	9,408	15,697.80	7.66	7.75	10,129	16,914.15
Non-ETC Class 2 - 9	65	372.15	143	727.64	161	895.48	369	1,995.27	379	2,074.74	-2.64	-3.83	369	1,995.27
Totals:	**7,777**	**$11,144.41**	**12,930**	**$20,147.97**	**19,245**	**$26,892.71**	**39,952**	**$58,185.09**	**38,706**	**$56,152.97**	**3.22**	**3.62**	**39,952**	**$58,185.09**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

015 Ramp M15

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	4	$2.76	21	$14.49	18	$12.42	43	$29.67	25	$17.25	72.00	72.00	43	$29.67
ETC Class 2 - 9	1	2.76	1	2.08	2	5.52	4	10.36	7	15.23	-42.86	-31.98	4	10.36
Non-ETC Class 1	3	3.45	11	12.65	17	20.09	31	36.19	26	29.96	19.23	20.79	31	36.19
Non-ETC Class 2 - 9	0	0	1	2.05	0	0	1	2.05	1	3.05	0.00	-32.79	1	2.05
Totals:	**8**	**$8.97**	**34**	**$31.27**	**37**	**$38.03**	**79**	**$78.27**	**59**	**$65.49**	**33.90**	**19.51**	**79**	**$78.27**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

018 Ramp M18

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	41	$28.29	64	$44.16	73	$50.37	178	$122.82	196	$135.24	-9.18	-9.18	178	$122.82
ETC Class 2 - 9	1	1.39	5	10.38	1	1.39	7	13.16	11	19.43	-36.36	-32.27	7	13.16
Non-ETC Class 1	15	17.28	32	36.81	37	42.99	84	97.08	70	81.65	20.00	18.90	84	97.08
Totals:	**57**	**$46.96**	**101**	**$91.35**	**111**	**$94.75**	**269**	**$233.06**	**277**	**$236.32**	**-2.89**	**-1.38**	**269**	**$233.06**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

019 M19

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	657	$912.88	1,177	$1,636.03	1,880	$2,612.85	3,714	$5,161.76	3,648	$5,070.72	1.81	1.80	3,714	$5,161.76
ETC Class 2 - 9	129	567.18	392	1,558.02	200	905.28	721	3,030.48	692	2,823.48	4.19	7.33	721	3,030.48
Non-ETC Class 1	189	388.93	468	954.82	660	1,356.49	1,317	2,700.24	1,071	2,192.32	22.97	23.17	1,317	2,700.24
Non-ETC Class 2 - 9	8	64.30	21	135.30	32	244.65	61	444.25	48	324.83	27.08	36.76	61	444.25
Totals:	**983**	**$1,933.29**	**2,058**	**$4,284.17**	**2,772**	**$5,119.27**	**5,813**	**$11,336.73**	**5,459**	**$10,411.35**	**6.48**	**8.89**	**5,813**	**$11,336.73**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

022 Ramp M22

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	23	$15.87	35	$24.15	56	$38.64	114	$78.66	113	$77.97	0.88	0.88	114	$78.66
ETC Class 2 - 9	6	9.03	16	38.01	10	19.38	32	66.42	23	51.19	39.13	29.75	32	66.42
Non-ETC Class 1	8	9.20	10	11.50	15	17.25	33	37.95	67	77.27	-50.75	-50.89	33	37.95
Non-ETC Class 2 - 9	0	0	0	0	1	4.00	1	4.00	1	4.00	0.00	0.00	1	4.00
Totals:	**37**	**$34.10**	**61**	**$73.66**	**82**	**$79.27**	**180**	**$187.03**	**204**	**$210.43**	**-11.76**	**-11.12**	**180**	**$187.03**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

026 Ramp M26

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	142	$97.81	147	$101.43	269	$185.61	558	$384.85	536	$369.84	4.10	4.06	558	$384.85
ETC Class 2 - 9	3	6.92	13	33.16	6	11.78	22	51.86	23	43.65	-4.35	18.81	22	51.86
Non-ETC Class 1	53	60.99	81	93.38	144	165.98	278	320.35	220	253.38	26.36	26.43	278	320.35
Non-ETC Class 2 - 9	0	0	4	14.05	3	8.10	7	22.15	7	24.10	0.00	-8.09	7	22.15
Totals:	**198**	**$165.72**	**245**	**$242.02**	**422**	**$371.47**	**865**	**$779.21**	**786**	**$690.97**	**10.05**	**12.77**	**865**	**$779.21**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

004 Ramp M4

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	48	$33.12	50	$34.50	95	$65.55	193	$133.17	195	$134.55	-1.03	-1.03	193	$133.17
ETC Class 2 - 9	1	1.39	2	3.47	1	1.39	4	6.25	7	14.53	-42.86	-56.99	4	6.25
Non-ETC Class 1	26	31.39	35	40.28	62	71.54	123	143.21	107	123.70	14.95	15.77	123	143.21
Non-ETC Class 2 - 9	0	0	2	6.10	3	6.15	5	12.25	1	4.00	400.00	206.25	5	12.25
Totals:	**75**	**$65.90**	**89**	**$84.35**	**161**	**$144.63**	**325**	**$294.88**	**310**	**$276.78**	**4.84**	**6.54**	**325**	**$294.88**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

005 M5

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	859	$893.36	1,020	$1,060.80	1,812	$1,884.22	3,691	$3,838.38	3,540	$3,681.60	4.27	4.26	3,691	$3,838.38
ETC Class 2 - 9	216	733.25	357	1,232.29	278	1,004.19	851	2,969.73	803	2,810.13	5.98	5.68	851	2,969.73
Non-ETC Class 1	362	580.59	773	1,236.00	1,185	1,906.18	2,320	3,722.77	1,979	3,174.67	17.23	17.26	2,320	3,722.77
Non-ETC Class 2 - 9	27	146.55	54	277.62	57	295.51	138	719.68	159	866.26	-13.21	-16.92	138	719.68
Totals:	**1,464**	**$2,353.75**	**2,204**	**$3,806.71**	**3,332**	**$5,090.10**	**7,000**	**$11,250.56**	**6,481**	**$10,532.66**	**8.01**	**6.82**	**7,000**	**$11,250.56**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

035 California

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	1,618	$1,681.94	2,637	$2,742.48	4,068	$4,229.68	8,323	$8,654.10	8,283	$8,613.80	0.48	0.47	8,323	$8,654.10
ETC Class 2 - 9	212	669.15	517	1,662.13	257	858.55	986	3,189.83	994	3,128.86	-0.80	1.95	986	3,189.83
Non-ETC Class 1	438	704.12	1,030	1,651.05	1,467	2,354.33	2,935	4,709.50	2,833	4,544.57	3.60	3.63	2,935	4,709.50
Non-ETC Class 2 - 9	21	108.20	44	207.57	48	257.80	113	573.57	105	556.71	7.62	3.03	113	573.57
Totals:	**2,289**	**$3,163.41**	**4,228**	**$6,263.23**	**5,840**	**$7,700.36**	**12,357**	**$17,127.00**	**12,215**	**$16,843.94**	**1.16**	**1.68**	**12,357**	**$17,127.00**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

039 Ramp M39

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	194	$133.52	333	$229.77	424	$292.39	951	$655.68	936	$645.50	1.60	1.58	951	$655.68
ETC Class 2 - 9	20	43.56	18	42.16	16	37.33	54	123.05	45	98.89	20.00	24.43	54	123.05
Non-ETC Class 1	31	35.65	90	103.79	103	118.72	224	258.16	250	287.79	-10.40	-10.30	224	258.16
Non-ETC Class 2 - 9	0	0	0	0	1	3.05	1	3.05	2	7.05	-50.00	-56.74	1	3.05
Totals:	**245**	**$212.73**	**441**	**$375.72**	**544**	**$451.49**	**1,230**	**$1,039.94**	**1,233**	**$1,039.23**	**-0.24**	**0.07**	**1,230**	**$1,039.94**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

044 Ramp M44

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	117	$80.73	132	$91.08	267	$184.06	516	$355.87	518	$357.42	-0.39	-0.43	516	$355.87
ETC Class 2 - 9	9	20.05	18	42.17	21	51.13	48	113.35	57	134.13	-15.79	-15.49	48	113.35
Non-ETC Class 1	24	27.92	47	54.71	88	105.85	159	188.48	143	166.50	11.19	13.20	159	188.48
Non-ETC Class 2 - 9	0	0	2	8.00	3	11.87	5	19.87	7	26.10	-28.57	-23.87	5	19.87
Totals:	**150**	**$128.70**	**199**	**$195.96**	**379**	**$352.91**	**728**	**$677.57**	**725**	**$684.15**	**0.41**	**-0.96**	**728**	**$677.57**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

048 Ramp M48

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	613	$422.63	780	$538.20	1,510	$1,041.73	2,903	$2,002.56	2,881	$1,987.72	0.76	0.75	2,903	$2,002.56
ETC Class 2 - 9	18	36.01	67	138.41	22	49.78	107	224.20	94	191.77	13.83	16.91	107	224.20
Non-ETC Class 1	131	151.44	226	260.61	422	488.15	779	900.20	737	851.96	5.70	5.66	779	900.20
Non-ETC Class 2 - 9	3	10.10	8	24.25	5	15.25	16	49.60	17	48.55	-5.88	2.16	16	49.60
Totals:	**765**	**$620.18**	**1,081**	**$961.47**	**1,959**	**$1,594.91**	**3,805**	**$3,176.56**	**3,729**	**$3,080.00**	**2.04**	**3.14**	**3,805**	**$3,176.56**

Executive Summary Traffic & Revenue (Daily)

Road Information
Highway: **(All)**
District: **(All)**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014
05/01/2014

052 M52

	Morning (00:00 - 08:00)		Day (08:00 - 04:00)		Evening (04:00 - 12:00)		Selected Day Totals		Previous Day Totals		% Inc/Dec		Month To Selected Day Totals	
Description	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**	**Count**	**Revenue**
ETC Class 1	1,194	$1,659.31	1,469	$2,041.21	2,611	$3,627.54	5,274	$7,328.06	5,083	$7,064.67	3.76	3.73	5,274	$7,328.06
ETC Class 2 - 9	27	133.86	73	327.06	60	270.48	160	731.40	209	892.86	-23.44	-18.08	160	731.40
Non-ETC Class 1	279	574.53	640	1,317.09	927	1,908.40	1,846	3,800.02	1,905	3,914.03	-3.10	-2.91	1,846	3,800.02
Non-ETC Class 2 - 9	6	43.00	7	52.70	8	49.10	21	144.80	31	210.09	-32.26	-31.08	21	144.80
Totals:	**1,506**	**$2,410.70**	**2,189**	**$3,738.06**	**3,606**	**$5,855.52**	**7,301**	**$12,004.28**	**7,228**	**$12,081.65**	**1.01**	**-0.64**	**7,301**	**$12,004.28**

~ End of Report ~

CRTH2000LnCntSta_Fam

Exit Lanes Traffic Counts & Statistics (Daily)

Road Information
Highway: Toll 76-276, Toll 476
Interchange: 05 006 PIT

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period
05/01/2014

Exit Lanes

Lane/Mode	Total	AM 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	PM 12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12
5 ETC	1,493	11	2	2	5	10	80	88	294	164	107	104	100	61	0	7	85	76	110	66	38	28	28	12	15
5 Non-ETC	814	0	0	0	0	0	0	4	21	61	65	55	57	61	0	20	86	90	91	88	48	43	17	7	0
5 Total:	**2,307**	**11**	**2**	**2**	**5**	**10**	**80**	**92**	**315**	**225**	**172**	**159**	**157**	**122**	**0**	**27**	**171**	**166**	**201**	**154**	**86**	**71**	**45**	**19**	**15**
7 ETC	8,786	57	35	44	53	96	310	717	695	597	481	408	366	366	452	466	545	691	777	551	338	269	213	153	106
8 ETC	7	0	0	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0
8 Non-ETC	2,140	22	14	9	5	22	69	113	140	107	102	104	119	119	138	146	134	135	146	131	109	87	59	70	40
8 Total:	**2,147**	**22**	**14**	**9**	**5**	**25**	**69**	**113**	**140**	**107**	**103**	**104**	**119**	**120**	**138**	**146**	**134**	**135**	**146**	**132**	**109**	**87**	**59**	**71**	**40**
9 ETC	4	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0
9 Non-ETC	1,463	20	10	7	5	14	49	73	82	57	76	49	77	74	108	135	89	103	85	91	54	58	41	37	69
9 Total:	**1,467**	**20**	**10**	**7**	**5**	**14**	**49**	**73**	**82**	**57**	**76**	**50**	**77**	**74**	**109**	**135**	**89**	**104**	**85**	**92**	**54**	**58**	**41**	**37**	**69**
10 ETC	125	9	9	8	10	18	34	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	12	23
10 Non-ETC	1,083	0	0	0	0	0	6	29	60	67	60	72	51	62	76	118	94	102	82	74	42	44	27	17	0
10 Total:	**1,208**	**9**	**9**	**8**	**10**	**18**	**40**	**29**	**60**	**67**	**60**	**72**	**51**	**63**	**76**	**118**	**94**	**102**	**83**	**74**	**42**	**44**	**27**	**29**	**23**
11 ETC	4,036	10	14	7	2	17	53	215	426	332	239	163	133	128	182	203	247	375	483	316	186	118	99	66	22
99 ETC	105	0	0	0	0	0	2	5	4	9	5	7	7	4	12	5	8	14	9	5	3	2	3	1	0
99 Non-ETC	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
99 Total:	**107**	**0**	**0**	**0**	**0**	**0**	**2**	**5**	**4**	**9**	**5**	**7**	**8**	**4**	**12**	**5**	**8**	**14**	**10**	**5**	**3**	**2**	**3**	**1**	**0**
Grand Total:	**20,058**	**129**	**84**	**77**	**80**	**180**	**603**	**1,244**	**1,722**	**1,394**	**1,136**	**963**	**911**	**877**	**969**	**1,100**	**1,288**	**1,587**	**1,785**	**1,324**	**818**	**649**	**487**	**376**	**275**

Exit Lanes Traffic Counts & Statistics (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 006 PIT**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014

Peak Hour Statistics

	AM			PM		
	6-7	7-8	8-9	4-5	5-6	6-7
Total:	1,244	1,722	1,394	1,587	1,785	1,324
ETC Total:	1,025	1,419	1,102	1,157	1,380	940

Grand Total	All Peak Hours
Combined Traffic	9,056
ETC Traffic	7,023
Non-ETC	2,033
% ETC	77.55%
% ETC AM Peak	81.33%
% ETC PM Peak	74.04%
ETC High Hour: 5-6 PM Lane: 7	777

~ End of Report ~

CRTH7400EEntCorrTxnIvExitPrcls_R

Express Entry Correlated Transactions With Invalid Exit Preclass (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	**05/01/2014**

Total Transaction Counts: 49

Entry Interchange: 030 Warrendale

Entry Preclass	Exit Preclass	Tag Class	PTC Class	Entry Lane	Entry DateTime	Exit Interchange	Exit Lane	Exit DateTime
6	7	5	6	7	05/01/2014 06:03:55	320 S.R. 29	3	05/01/2014 12:48:01
6	6	5	6	7	05/01/2014 06:33:48	320 S.R. 29	4	05/01/2014 11:57:43
1	1	1	1	7	05/01/2014 06:35:22	320 S.R. 29	4	05/01/2014 11:49:38
1	1	1	1	7	05/01/2014 07:37:15	320 S.R. 29	3	05/01/2014 12:15:46
5	2	1	5	7	05/01/2014 07:59:44	320 S.R. 29	4	05/01/2014 12:39:28
1	1	1	1	7	05/01/2014 08:00:54	320 S.R. 29	4	05/01/2014 12:54:55
1	1	1	1	7	05/01/2014 09:14:23	242 Harrisburg West	5	05/01/2014 12:46:41
1	1	1	1	7	05/01/2014 10:18:58	320 S.R. 29	4	05/01/2014 14:53:47
1	1	1	1	7	05/01/2014 11:45:08	320 S.R. 29	4	05/01/2014 15:52:24
1	1	1	1	7	05/01/2014 12:47:17	057 Pittsburgh	9	05/01/2014 13:10:23
1	1	1	1	7	05/01/2014 14:08:43	320 S.R. 29	4	05/01/2014 18:50:19
1	1	1	1	7	05/01/2014 14:11:39	320 S.R. 29	4	05/01/2014 18:28:31
1	1	1	1	7	05/01/2014 17:00:11	039 Butler Valley	4	05/01/2014 17:08:26
1	1	1	1	7	05/01/2014 21:19:10	320 S.R. 29	3	05/02/2014 12:06:44
6	7	5	6	7	05/01/2014 23:09:39	351 Bensalem	11	05/02/2014 05:59:25

Express Entry Correlated Transactions With Invalid Exit Preclass (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	**05/01/2014**

Total Transaction Counts: 49

Entry Interchange: 020 Mid-County

Entry Preclass	Exit Preclass	Tag Class	PTC Class	Entry Lane	Entry DateTime	Exit Interchange	Exit Lane	Exit DateTime
6	5	5	6	5	05/01/2014 05:12:02	056 Lehigh Valley	6	05/01/2014 22:08:35
1	1	1	1	5	05/01/2014 09:27:59	339 Fort Washington	7	05/01/2014 09:34:26
1	3	2	1	5	05/01/2014 15:07:10	031 Lansdale	5	05/01/2014 15:19:49
1	0	1	1	5	05/01/2014 18:16:21	105 Wilkes-Barre	4	05/01/2014 19:30:21
6	6	5	6	5	05/01/2014 20:41:06	056 Lehigh Valley	6	05/01/2014 21:18:46
1	1	1	1	5	05/01/2014 20:44:06	056 Lehigh Valley	6	05/01/2014 21:22:51
1	1	1	1	5	05/01/2014 21:01:43	056 Lehigh Valley	6	05/01/2014 21:39:02
4	3	5	4	5	05/01/2014 21:07:07	056 Lehigh Valley	6	05/01/2014 21:45:48
1	1	1	1	5	05/01/2014 21:07:32	056 Lehigh Valley	6	05/01/2014 21:42:51
1	1	1	1	5	05/01/2014 21:21:12	056 Lehigh Valley	6	05/01/2014 22:04:24
6	4	5	6	5	05/01/2014 21:27:40	056 Lehigh Valley	6	05/01/2014 22:06:01
1	1	1	1	5	05/01/2014 21:47:52	056 Lehigh Valley	6	05/01/2014 22:25:23
1	1	1	1	5	05/01/2014 21:49:03	056 Lehigh Valley	6	05/01/2014 22:23:02
1	2	1	1	6	05/01/2014 15:08:11	031 Lansdale	5	05/01/2014 15:19:57
1	1	1	1	6	05/01/2014 15:57:29	056 Lehigh Valley	6	05/01/2014 16:34:45
1	1	1	1	6	05/01/2014 18:33:09	351 Bensalem	11	05/02/2014 09:55:37
1	1	1	1	6	05/01/2014 20:11:20	359 Delaware River Bridge	10	05/01/2014 20:32:32
1	1	1	1	6	05/01/2014 20:37:25	056 Lehigh Valley	6	05/01/2014 21:19:15
1	2	2	1	6	05/01/2014 20:39:32	056 Lehigh Valley	6	05/01/2014 21:17:48
1	1	1	1	6	05/01/2014 20:49:31	056 Lehigh Valley	6	05/01/2014 21:23:21
1	1	1	1	6	05/01/2014 20:59:52	056 Lehigh Valley	6	05/01/2014 21:34:28
1	1	1	1	6	05/01/2014 21:01:06	056 Lehigh Valley	6	05/01/2014 21:37:29
1	1	1	1	6	05/01/2014 21:05:09	056 Lehigh Valley	6	05/01/2014 21:41:59
6	6	5	6	6	05/01/2014 21:10:53	056 Lehigh Valley	6	05/01/2014 21:48:53
6	4	5	6	6	05/01/2014 21:21:28	056 Lehigh Valley	6	05/01/2014 22:00:14
1	1	1	1	6	05/01/2014 21:23:05	056 Lehigh Valley	6	05/01/2014 22:00:20
1	1	1	1	6	05/01/2014 21:26:25	056 Lehigh Valley	6	05/01/2014 22:01:45
1	1	1	1	6	05/01/2014 21:34:18	056 Lehigh Valley	6	05/01/2014 22:13:58
1	1	1	1	6	05/01/2014 21:37:10	056 Lehigh Valley	6	05/01/2014 22:15:44
1	1	1	1	6	05/01/2014 21:46:48	056 Lehigh Valley	6	05/01/2014 22:20:33
1	1	1	1	6	05/01/2014 21:50:16	056 Lehigh Valley	6	05/01/2014 22:28:47

Express Entry Correlated Transactions With Invalid Exit Preclass (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	**05/01/2014**

Total Transaction Counts: 49

Entry Interchange: 020 Mid-County

Entry Preclass	Exit Preclass	Tag Class	PTC Class	Entry Lane	Entry DateTime	Exit Interchange	Exit Lane	Exit DateTime
1	1	1	1	6	05/01/2014 21:54:35	056 Lehigh Valley	6	05/01/2014 22:27:17
1	1	1	1	6	05/01/2014 21:56:48	056 Lehigh Valley	6	05/01/2014 22:30:20
1	1	1	1	6	05/01/2014 21:57:38	056 Lehigh Valley	6	05/01/2014 22:29:44

~ End of Report ~

CRTH7200EEntExtCnt_Grp

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 030 Warrendale

Exit

MP Interchange	Lane Num	Counts
039 Butler Valley	4	70
039 Butler Valley	5	1,170
039 Butler Valley	6	6
048 Allegheny Valley	5	11
048 Allegheny Valley	6	250
048 Allegheny Valley	7	21
048 Allegheny Valley	8	939
048 Allegheny Valley	9	37
057 Pittsburgh	5	53
057 Pittsburgh	7	602
057 Pittsburgh	8	3
057 Pittsburgh	10	27
057 Pittsburgh	11	896
067 Irwin	4	29
067 Irwin	5	56
067 Irwin	6	282
067 Irwin	7	313
067 Irwin	8	34
075 New Stanton	5	247
075 New Stanton	6	121
075 New Stanton	9	59
075 New Stanton	10	25
091 Donegal	4	144
110 Somerset	3	1
110 Somerset	4	1
110 Somerset	5	28

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 030 Warrendale

Exit

MP Interchange	Lane Num	Counts
110 Somerset	6	146
146 Bedford	3	58
146 Bedford	5	12
161 Breezewood	5	119
161 Breezewood	6	466
161 Breezewood	7	7
161 Breezewood	8	29
161 Breezewood	9	43
161 Breezewood	10	427
180 Fort Littleton	4	12
189 Willow Hill	4	3
201 Blue Mountain	4	37
226 Carlisle	6	189
226 Carlisle	7	52
236 Gettysburg Pike	4	3
236 Gettysburg Pike	5	40
236 Gettysburg Pike	6	10
236 Gettysburg Pike	7	4
236 Gettysburg Pike	9	4
242 Harrisburg West	4	1
242 Harrisburg West	5	14
242 Harrisburg West	7	56
242 Harrisburg West	8	32
247 Harrisburg East	5	8
247 Harrisburg East	6	1
247 Harrisburg East	7	57
247 Harrisburg East	8	1

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 030 Warrendale

Exit

MP Interchange	Lane Num	Counts
247 Harrisburg East	9	40
266 Lebanon-Lancaster	5	8
266 Lebanon-Lancaster	6	5
266 Lebanon-Lancaster	7	3
286 Reading	5	2
286 Reading	6	2
286 Reading	7	11
286 Reading	8	8
298 Morgantown	4	7
298 Morgantown	6	2
298 Morgantown	7	5
312 Downingtown	4	1
312 Downingtown	5	2
312 Downingtown	6	12
312 Downingtown	7	30
320 S.R. 29	3	6
320 S.R. 29	4	10
326 Valley Forge	9	2
326 Valley Forge	10	5
326 Valley Forge	11	1
326 Valley Forge	13	8
326 Valley Forge	14	37
326 Valley Forge	15	52
326 Valley Forge	16	1
326 Valley Forge	17	1
333 Norristown	8	2
333 Norristown	9	2

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 030 Warrendale

Exit

MP Interchange	Lane Num	Counts
333 Norristown	10	1
333 Norristown	11	1
339 Fort Washington	6	3
339 Fort Washington	8	5
339 Fort Washington	9	3
339 Fort Washington	10	1
343 Willow Grove	7	4
343 Willow Grove	9	2
351 Bensalem	9	4
351 Bensalem	10	4
351 Bensalem	11	11
351 Bensalem	12	16
351 Bensalem	13	5
351 Bensalem	14	1
351 Bensalem	16	1
352 Street Road	3	1
358 Delaware Valley	3	3
359 Delaware River Bridge	9	10
359 Delaware River Bridge	10	14
359 Delaware River Bridge	11	4
359 Delaware River Bridge	12	2
031 Lansdale	10	1
044 Quakertown	5	1
	Total:	**7,619**

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 020 Mid-County

Exit

MP Interchange	Lane Num	Counts
339 Fort Washington	5	19
339 Fort Washington	6	2,160
339 Fort Washington	7	39
339 Fort Washington	8	1,831
339 Fort Washington	9	120
339 Fort Washington	10	865
343 Willow Grove	5	979
343 Willow Grove	6	28
343 Willow Grove	7	1,494
343 Willow Grove	8	20
343 Willow Grove	9	1,391
343 Willow Grove	10	33
351 Bensalem	7	1
351 Bensalem	8	2
351 Bensalem	9	234
351 Bensalem	10	491
351 Bensalem	11	563
351 Bensalem	12	472
351 Bensalem	13	97
351 Bensalem	14	9
351 Bensalem	16	7
352 Street Road	3	132
352 Street Road	4	87
358 Delaware Valley	3	137
358 Delaware Valley	4	3
359 Delaware River Bridge	6	4
359 Delaware River Bridge	8	33

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 020 Mid-County

Exit

MP Interchange	Lane Num	Counts
359 Delaware River Bridge	9	822
359 Delaware River Bridge	10	869
359 Delaware River Bridge	11	462
359 Delaware River Bridge	12	88
031 Lansdale	5	2,037
031 Lansdale	6	2
031 Lansdale	7	1
031 Lansdale	8	1,244
031 Lansdale	9	481
031 Lansdale	10	107
044 Quakertown	4	21
044 Quakertown	5	935
044 Quakertown	6	183
044 Quakertown	7	731
044 Quakertown	8	209
056 Lehigh Valley	5	662
056 Lehigh Valley	6	755
056 Lehigh Valley	7	652
056 Lehigh Valley	8	287
056 Lehigh Valley	11	385
056 Lehigh Valley	12	860
056 Lehigh Valley	13	427
074 Mahoning Valley	5	475
095 Pocono	5	17
095 Pocono	6	440
095 Pocono	7	269
095 Pocono	8	88

Express Entry – Exit Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 020 Mid-County

Exit

MP Interchange	Lane Num	Counts
105 Wilkes-Barre	3	1
105 Wilkes-Barre	4	420
115 Wyoming Valley	4	9
115 Wyoming Valley	5	1
115 Wyoming Valley	6	703
115 Wyoming Valley	7	463
	Total:	**26,357**

~ End of Report ~

CRTH7600EEntExtLnPrclsDiag_G

Express Entry – Exit Lane Preclass Diagnostics (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**(All)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 030 Warrendale

Hardware Failure Bit Description	Other Reasons	MP Interchange	Lane Num	Total Count
Preclass PG degraded		091 Donegal	4	2
	PreclassAxles <> PostclassAxles	039 Butler Valley	4	2
	PreclassAxles <> PostclassAxles	320 S.R. 29	3	5
	PreclassAxles <> PostclassAxles	320 S.R. 29	4	9
			Subtotal:	**18**

Express Entry – Exit Lane Preclass Diagnostics (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**(All)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Entry Interchange: 020 Mid-County

Hardware Failure Bit Description	Other Reasons	MP Interchange	Lane Num	Total Count
Preclass PG degraded		359 Delaware River Bridge	10	3
Preclass TR degraded		031 Lansdale	5	128
Postclass PG degraded		359 Delaware River Bridge	10	38
Postclass PG degraded		031 Lansdale	9	178
	Buffered Message	044 Quakertown	7	1
			Subtotal:	**348**

~ End of Report ~

CRTH7000EEntLnCntPct_Grp

Express Entry Lane Counts & Percentages (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**06 039 MIC**	**Audit Status:**	**Audited**	

020 Mid-County

	Express Entry Counts				Correlated Detail Counts				Normally Correlated Txn with Invalid Exit Preclass	
		No Tag Read				Orphan Entry				
Lane Num	**Tag Read Count**	**Count**	**%**	**Total Lane Count**	**Normally Correlated Count**	**Count**	**%**	**Total Correlated Txn**	**Count**	**%**
5	12,697	466		13,163	12,577	120		12,697	93	
6	13,920	469		14,389	13,780	140		13,920	255	
Subtotal:	**26,617**	**935**	**3.39**	**27,552**	**26,357**	**260**	**0.98**	**26,617**	**348**	**1.32**
Grand total:	**26,617**	**935**		**27,552**	**26,357**	**260**		**26,617**	**348**	

~ End of Report ~

CRTH7500EExitCorrTxnIvEntPrcls_R

Express Exit Correlated Transactions With Invalid Entry Preclass (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**06 039 MIC**	**Audit Status:**	**Audited**	**05/01/2014**

Total Transaction Counts: 8

Exit Interchange: 020 Mid-County

Entry Preclass	Exit Preclass	Tag Class	PTC Class	Entry Interchange	Entry Lane	Entry DateTime	Exit Lane	Exit DateTime
0	1	1	1	031 Lansdale	2	05/01/2014 05:32:37	7	05/01/2014 05:43:05
0	1	1	1	031 Lansdale	2	05/01/2014 10:15:45	8	05/01/2014 10:25:34
0	1	1	1	044 Quakertown	2	05/01/2014 14:28:31	7	05/01/2014 14:49:56
0	1	1	1	044 Quakertown	2	05/01/2014 17:50:05	8	05/01/2014 18:11:55
0	1	1	1	343 Willow Grove	2	05/01/2014 10:19:22	7	05/01/2014 10:28:22
0	1	1	1	343 Willow Grove	1	05/01/2014 18:56:13	7	05/01/2014 19:05:30
0	5	6	5	343 Willow Grove	3	05/01/2014 05:30:17	8	05/01/2014 05:41:35
1	1	1	1	351 Bensalem	6	05/01/2014 06:24:47	8	05/01/2014 06:42:54

~ End of Report ~

CRTH7300EExtEntCnt_Grp

Express Exit – Entry Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Exit Interchange: 030 Warrendale

Entry

MP Interchange	Lane Num	Counts
039 Butler Valley	1	1,060
039 Butler Valley	2	152
039 Butler Valley	3	17
048 Allegheny Valley	1	14
048 Allegheny Valley	2	218
048 Allegheny Valley	3	681
048 Allegheny Valley	4	339
057 Pittsburgh	1	208
057 Pittsburgh	3	265
057 Pittsburgh	4	1,084
067 Irwin	1	26
067 Irwin	2	455
067 Irwin	3	199
075 New Stanton	1	93
075 New Stanton	2	127
075 New Stanton	3	200
075 New Stanton	4	24
091 Donegal	1	70
091 Donegal	2	80
110 Somerset	1	45
110 Somerset	2	105
146 Bedford	1	47
146 Bedford	2	6
161 Breezewood	2	835
161 Breezewood	3	190
161 Breezewood	4	237

Express Exit – Entry Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Exit Interchange: 030 Warrendale

Entry

MP Interchange	Lane Num	Counts
180 Fort Littleton	1	8
180 Fort Littleton	2	1
189 Willow Hill	1	4
201 Blue Mountain	1	22
201 Blue Mountain	2	1
226 Carlisle	1	60
226 Carlisle	2	40
226 Carlisle	3	162
226 Carlisle	4	6
236 Gettysburg Pike	1	8
236 Gettysburg Pike	2	35
242 Harrisburg West	1	16
242 Harrisburg West	2	52
242 Harrisburg West	3	10
247 Harrisburg East	1	44
247 Harrisburg East	2	20
247 Harrisburg East	3	42
266 Lebanon-Lancaster	2	11
266 Lebanon-Lancaster	3	1
286 Reading	1	8
286 Reading	2	5
286 Reading	3	12
298 Morgantown	1	12
298 Morgantown	2	5
312 Downingtown	1	13
312 Downingtown	2	23
312 Downingtown	3	4

Express Exit – Entry Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Exit Interchange: 030 Warrendale

Entry

MP Interchange	Lane Num	Counts
320 S.R. 29	1	1
320 S.R. 29	2	5
326 Valley Forge	2	1
326 Valley Forge	3	1
326 Valley Forge	4	15
326 Valley Forge	5	3
326 Valley Forge	6	87
333 Norristown	2	6
333 Norristown	4	3
333 Norristown	5	1
339 Fort Washington	2	2
339 Fort Washington	3	5
340 Virginia Drive	1	1
340 Virginia Drive	2	1
343 Willow Grove	2	6
343 Willow Grove	3	4
351 Bensalem	1	4
351 Bensalem	2	11
351 Bensalem	3	1
351 Bensalem	4	10
351 Bensalem	6	1
358 Delaware Valley	2	3
359 Delaware River Bridge	2	13
359 Delaware River Bridge	3	23
031 Lansdale	1	1
031 Lansdale	2	2
031 Lansdale	3	1

Express Exit – Entry Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Exit Interchange: 030 Warrendale

Entry

MP Interchange	Lane Num	Counts
	Total:	**7,614**

Express Exit – Entry Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Exit Interchange: 020 Mid-County

Entry

MP Interchange	Lane Num	Counts
339 Fort Washington	1	155
339 Fort Washington	2	2,288
339 Fort Washington	3	2,244
339 Fort Washington	4	59
340 Virginia Drive	1	163
340 Virginia Drive	2	1,100
343 Willow Grove	1	143
343 Willow Grove	2	2,096
343 Willow Grove	3	1,694
343 Willow Grove	4	183
351 Bensalem	1	211
351 Bensalem	2	1,094
351 Bensalem	3	184
351 Bensalem	4	567
351 Bensalem	5	41
351 Bensalem	6	163
358 Delaware Valley	1	35
358 Delaware Valley	2	131
359 Delaware River Bridge	1	89
359 Delaware River Bridge	2	822
359 Delaware River Bridge	3	1,454
359 Delaware River Bridge	4	4
020 Mid-County	5	1
031 Lansdale	1	131
031 Lansdale	2	896
031 Lansdale	3	2,368
031 Lansdale	4	240

Express Exit – Entry Counts (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

Exit Interchange: 020 Mid-County

Entry

MP Interchange	Lane Num	Counts
044 Quakertown	1	66
044 Quakertown	2	1,243
044 Quakertown	3	636
056 Lehigh Valley	1	2,255
056 Lehigh Valley	2	392
056 Lehigh Valley	3	287
056 Lehigh Valley	4	995
074 Mahoning Valley	1	247
074 Mahoning Valley	2	113
095 Pocono	1	267
095 Pocono	2	133
095 Pocono	3	393
105 Wilkes-Barre	1	136
105 Wilkes-Barre	2	253
115 Wyoming Valley	1	53
115 Wyoming Valley	2	63
115 Wyoming Valley	3	780
	Total:	**26,868**

~ End of Report ~

CRTH7100EExtLnCntPct_Grp

Express Exit Lane Counts & Percentages (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
Interchange:	**(All)**	**Audit Status:**	**Audited**	

030 Warrendale

	Express Exit Counts				Correlated Detail Counts				Normally Correlated Txn with Invalid Entry Preclass	
		No Tag Read				Orphan Exit				
Lane Num	Tag Read Count	Count	%	Total Lane Count	Normally Correlated Count	Count	%	Total Correlated Txn	Count	%
8	7,709	165		7,874	7,609	100		7,709	29	
9	6	3		9	5	1		6	0	
Subtotal:	**7,715**	**168**	**2.13**	**7,883**	**7,614**	**101**	**1.31**	**7,715**	**29**	**0.38**
Grand total:	**7,715**	**168**		**7,883**	**7,614**	**101**		**7,715**	**29**	

Express Exit Lane Counts & Percentages (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/10/2014

020 Mid-County

	Express Exit Counts				Correlated Detail Counts				Normally Correlated Txn with Invalid Entry Preclass	
		No Tag Read				Orphan Exit				
Lane Num	Tag Read Count	Count	%	Total Lane Count	Normally Correlated Count	Count	%	Total Correlated Txn	Count	%
7	14,462	357		14,819	14,307	155		14,462	4	
8	12,683	373		13,056	12,561	122		12,683	16	
Subtotal:	**27,145**	**730**	**2.62**	**27,875**	**26,868**	**277**	**1.02**	**27,145**	**20**	**0.07**
Grand total:	**27,145**	**730**		**27,875**	**26,868**	**277**		**27,145**	**20**	

~ End of Report ~

CRTH3400FareSchedule

Fare Schedule (Barrier System)

E-ZPASS Rates

Road Information

Effective Date: **1/5/2014 12:00:01AM**

Released: **Yes**

Report Date

06/10/2014

Plaza		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
4 Ramp M4	Toll 43 (MF)	$0.69	$1.39	$2.08	$2.76	$3.46	$0.00	$0.00	$0.00	$0.00
5 M5	Toll 43 (MF)	1.04	2.08	3.10	4.14	5.17	0.00	0.00	0.00	0.00
15 Ramp M15	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
18 Ramp M18	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
19 M19	Toll 43 (MF)	1.39	2.76	4.14	5.52	6.90	0.00	0.00	0.00	0.00
22 Ramp M22	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
26 Ramp M26	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
35 California	Toll 43 (MF)	1.04	2.08	3.10	4.14	5.17	0.00	0.00	0.00	0.00
39 Ramp M39	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
44 Ramp M44	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
48 Ramp M48	Toll 43 (MF)	0.69	1.39	2.08	2.76	3.46	0.00	0.00	0.00	0.00
52 M52	Toll 43 (MF)	1.39	2.76	4.14	5.52	6.90	0.00	0.00	0.00	0.00
17 Mt Jackson Rte 108	Toll 376 (BVE)	0.69	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
18 West Toll 376	Toll 376 (BVE)	1.39	2.08	2.43	3.10	4.14	5.17	7.60	9.66	56.57
20 Moravia Rte 168	Toll 376 (BVE)	0.69	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
29 Beaver Falls Rte 551	Toll 376 (BVE)	0.69	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
30 East Toll 376	Toll 376 (BVE)	0.69	1.04	1.39	1.39	2.08	2.76	3.79	4.83	28.28
4 Rte 136	Toll 66 (AKH)	1.04	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
5 AKH Mainline	Toll 66 (AKH)	1.39	2.08	2.43	2.76	4.14	5.17	7.60	9.66	56.57
6 Route 30	Toll 66 (AKH)	1.04	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
8 Route 130	Toll 66 (AKH)	0.69	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
9 Route 66	Toll 66 (AKH)	0.69	2.76	2.76	2.76	2.76	0.00	0.00	0.00	0.00
122 Keyser Avenue	NE Barrier	0.69	1.72	2.08	3.10	4.14	5.17	6.21	6.90	26.20
131 Clarks Summit	NE Barrier	0.69	1.72	2.08	3.10	4.14	5.17	6.21	6.90	26.20
2 Gateway Barrier	Gateway Barrier	4.14	8.28	12.42	16.55	20.70	20.70	20.70	20.70	20.70
2 SB Route 30	Toll 576 (SB)	0.63	1.25	1.88	2.50	3.13	0.00	0.00	0.00	0.00
4 SB Westport Rd	Toll 576 (SB)	0.63	1.25	1.88	2.50	3.13	0.00	0.00	0.00	0.00
6 SB Route 22	Toll 576 (SB)	0.63	1.25	1.88	2.50	3.13	0.00	0.00	0.00	0.00

~ End of Report ~

CRTH2455FinTrfDet_T

Finance Traffic Details (Date/Time Range)

Road Information
Highway: Toll 43 (MF)
From Interchange: (All)
To Interchange: (All)

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

Fare Collection System Information
Fare Collection System: Combined

District Group Information
Group by District: No

MP Interchange	All Classes	Class 1	Class 2 - 9
004 Ramp M4	1	1	0
005 M5	9	5	4
019 M19	7	7	0
035 California	15	13	2
039 Ramp M39	1	1	0
044 Ramp M44	2	2	0
052 M52	2	2	0
Grand Total:	**37**	**31**	**6**

~ End of Report ~

CRTH3255FinTrfRev_T

Finance Traffic & Revenue Details (Date/Time Range)

Road Information
Highway: Toll 76-276, Toll 476
From Interchange: (All)
To Interchange: (All)

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

Fare Collection System Information
Fare Collection System: Combined

District Group Information
Group by District: No

MP	Interchange	Class 1 Traffic	Class 1 Revenue	Class 2 - 9 Traffic	Class 2 - 9 Revenue	All Classes Traffic	All Classes Revenue
030	Warrendale	3	$46.51	7	$187.69	10	$234.20
039	Butler Valley	4	6.07	1	3.10	5	9.17
048	Allegheny Valley	5	7.56	1	6.90	6	14.46
057	Pittsburgh	13	99.29	3	43.82	16	143.11
067	Irwin	5	10.12	2	60.37	7	70.49
075	New Stanton	14	121.35	16	569.49	30	690.84
091	Donegal	1	3.05	0	0.00	1	3.05
110	Somerset	1	3.10	0	0.00	1	3.10
146	Bedford	3	31.61	2	40.01	5	71.62
161	Breezewood	8	62.53	13	381.93	21	444.46
189	Willow Hill	2	4.95	0	0.00	2	4.95
201	Blue Mountain	6	70.35	9	420.82	15	491.17
226	Carlisle	0	0.00	10	100.37	10	100.37
236	Gettysburg Pike	1	2.05	0	0.00	1	2.05
242	Harrisburg West	3	16.85	3	27.90	6	44.75
247	Harrisburg East	4	12.49	4	87.28	8	99.77
266	Lebanon-Lancaster	3	19.27	0	0.00	3	19.27
286	Reading	3	9.68	2	24.48	5	34.16
298	Morgantown	5	11.92	2	10.02	7	21.94
312	Downingtown	3	3.44	2	33.46	5	36.90
320	S.R. 29	1	4.73	0	0.00	1	4.73

Finance Traffic & Revenue Details (Date/Time Range)

Road Information
Highway: **Toll 76-276, Toll 476**
From Interchange: **(All)**
To Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

Fare Collection System Information
Fare Collection System: **Combined**

District Group Information
Group by District: **No**

	Class 1		Class 2 - 9		All Classes	
MP Interchange	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**
326 Valley Forge	15	$78.12	10	$288.42	25	$366.54
333 Norristown	7	15.45	1	3.10	8	18.55
339 Fort Washington	13	25.43	2	2.43	15	27.86
343 Willow Grove	15	30.43	7	38.31	22	68.74
351 Bensalem	18	37.32	6	149.76	24	187.08
352 Street Road	1	1.86	0	0.00	1	1.86
358 Delaware Valley	4	8.33	2	12.01	6	20.34
359 Delaware River Bridge	11	48.73	10	126.25	21	174.98
020 Mid-County	20	46.39	3	34.49	23	80.88
031 Lansdale	15	29.84	2	24.59	17	54.43
044 Quakertown	6	26.24	2	29.31	8	55.55
056 Lehigh Valley	14	46.83	7	73.36	21	120.19
074 Mahoning Valley	6	14.51	0	0.00	6	14.51
095 Pocono	2	5.39	4	35.52	6	40.91
105 Wilkes-Barre	5	24.58	0	0.00	5	24.58
115 Wyoming Valley	3	20.04	6	84.51	9	104.55
Grand Total:	**243**	**$1,006.41**	**139**	**$2,899.70**	**382**	**$3,906.11**

~ End of Report ~

CRTH6000GLCashBnkDpst_Fam

G/L Cash Data & Verified Bank Deposit (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
District:	**District 1**		**05/31/2014**
Interchange:	**(All)**		

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Ramp M4	$5,031.50	$330.31	$5,361.81	$5,389.93	$28.12	$0.00
M5	118,890.95	22,384.37	141,275.32	141,199.00	(76.32)	0.00
Ramp M15	1,316.80	146.28	1,463.08	1,469.47	6.39	0.00
Ramp M18	2,902.02	82.15	2,984.17	3,048.56	64.39	0.00
M19	90,897.44	8,810.63	99,708.07	99,897.71	189.64	0.00
Ramp M22	2,186.89	204.16	2,391.05	2,398.62	7.57	0.00
Ramp M26	9,650.33	461.84	10,112.17	10,148.23	36.06	0.00
California	170,106.61	12,993.19	183,099.80	183,565.94	466.14	0.00
Ramp M39	8,896.13	469.60	9,365.73	9,371.74	6.01	0.00
Ramp M44	5,324.83	509.72	5,834.55	5,916.16	81.61	0.00
Ramp M48	31,732.93	1,626.08	33,359.01	33,459.50	100.49	0.00
M52	137,159.22	4,627.37	141,786.59	142,470.54	683.95	0.00
District 1 Totals:	**$584,095.65**	**$52,645.70**	**$636,741.35**	**$638,335.40**	**$1,594.05**	**$0.00**
Rte 136	9,168.01	1,242.75	10,410.76	10,388.26	(22.50)	0.00
AKH Mainline	272,733.59	110,054.68	382,788.27	383,098.60	310.33	0.00
Route 30	68,108.36	4,078.39	72,186.75	72,398.03	211.28	0.00
Route 130	12,378.07	734.53	13,112.60	13,181.34	68.74	0.00
Route 66	8,963.99	538.92	9,502.91	9,519.59	16.68	0.00
District 1 Totals:	**$371,352.02**	**$116,649.27**	**$488,001.29**	**$488,585.82**	**$584.53**	**$0.00**
Pittsburgh	977,211.50	154,635.35	1,131,846.85	1,131,934.76	87.91	0.00

G/L Cash Data & Verified Bank Deposit (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
District:	**District 1**		**05/31/2014**
Interchange:	**(All)**		

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$256,037.15	$35,237.70	$291,274.85	$291,241.90	($32.95)	$0.00
New Stanton	861,977.53	879,152.50	1,741,130.03	1,744,449.01	3,318.98	0.00
District 1 Totals:	**$2,095,226.18**	**$1,069,025.55**	**$3,164,251.73**	**$3,167,625.67**	**$3,373.94**	**$0.00**

~ End of Report ~

CRTH6000GLCashBnkDpst_D

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/01/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,920.95	$1,549.15	$8,470.10	$8,535.05	$64.95	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/02/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$10,084.35	$1,105.75	$11,190.10	$11,201.65	$11.55	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/03/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$8,841.25	$889.45	$9,730.70	$9,666.15	($64.55)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/04/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$8,916.75	$572.15	$9,488.90	$9,462.70	($26.20)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/05/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,961.65	$1,037.80	$7,999.45	$8,006.50	$7.05	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/06/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,517.45	$1,523.10	$8,040.55	$8,048.25	$7.70	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/07/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,535.15	$1,255.10	$7,790.25	$7,765.35	($24.90)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/08/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,732.75	$1,334.20	$9,066.95	$9,065.25	($1.70)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/09/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,291.10	$1,468.10	$10,759.20	$10,724.30	($34.90)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/10/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,818.05	$562.25	$10,380.30	$10,378.70	($1.60)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/11/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,559.65	$412.70	$9,972.35	$9,943.25	($29.10)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/12/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,946.80	$1,225.75	$8,172.55	$8,167.25	($5.30)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/13/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,819.25	$1,379.65	$8,198.90	$8,210.15	$11.25	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/14/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,949.20	$1,016.40	$7,965.60	$7,961.80	($3.80)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/15/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,481.40	$1,271.00	$8,752.40	$8,756.45	$4.05	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/16/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,236.00	$1,284.30	$10,520.30	$10,538.80	$18.50	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/17/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,078.20	$554.90	$9,633.10	$9,625.25	($7.85)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/18/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,893.45	$529.25	$10,422.70	$10,412.15	($10.55)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/19/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,029.35	$1,291.00	$8,320.35	$8,325.40	$5.05	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/20/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,165.55	$1,427.70	$8,593.25	$8,599.85	$6.60	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/21/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,067.35	$1,556.90	$8,624.25	$8,613.55	($10.70)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/22/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$8,197.45	$1,645.95	$9,843.40	$9,854.85	$11.45	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/23/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$10,899.80	$1,757.10	$12,656.90	$12,664.20	$7.30	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/24/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$10,011.75	$554.95	$10,566.70	$10,566.10	($0.60)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/25/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$8,377.95	$645.75	$9,023.70	$9,019.80	($3.90)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/26/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,116.35	$694.25	$9,810.60	$9,808.25	($2.35)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/27/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,438.80	$1,375.90	$8,814.70	$8,811.70	($3.00)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/28/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$6,996.45	$1,272.10	$8,268.55	$8,267.00	($1.55)	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/29/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$7,526.95	$1,512.20	$9,039.15	$9,059.95	$20.80	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/30/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,245.05	$1,432.30	$10,677.35	$10,682.85	$5.50	$0.00

G/L Cash Data Verified Bank Deposit by Day (Monthly)

Road Information		*Data Source*	*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**Ticket Transactions and Bank Deposits**	**05/01/2014**
Bank District:	**Wells Fargo (03-11)**		**05/31/2014**
Interchange:	**05 007 IRW**		

Revenue Date: 05/31/2014

MP Interchange	Class 1 - Cash	Class 2-9 - Cash	Total Cash	Verified Bank Deposit	Deposit Adjustment	Prior Period Bank Adjustment
Irwin	$9,380.95	$1,100.60	$10,481.55	$10,499.40	$17.85	$0.00
Monthly Grand Total of all Interchanges:	**$256,037.15**	**$35,237.70**	**$291,274.85**	**$291,241.90**	**($32.95)**	**$0.00**

~ End of Report ~

CRTH2155HwSts_T

Hardware Status (Date/Time Range)

Road Information

Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**
Lane: **(All)**
Error Code: **(All)**

Reporting Period

From: 05/01/2014 00:00:00
To: 05/01/2014 00:04:59

MP Interchange	Lane	Error Code/Description	Transaction	Date/Time	Acknowledged Date/Time	Cleared Date/Time
067 Irwin	6	Positive list File Out of Date	9132	05/01/2014 00:01:13		

~ End of Report ~

CRTH1400IcgByLn_Grp

Interchange by Lane (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**(All)**	**Audit Status:**	**Audited**	
Interchange:	**(All)**			

DISTRICT 1

MP	Interchange	All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
004	**Ramp M4**											
	Lane 1	97	0	97	0	0	0	0	0	0	0	0
	Lane 2	44	1	43	1	0	0	0	0	0	0	0
	Lane 3	96	1	95	0	0	1	0	0	0	0	0
	Lane 4	41	0	41	0	0	0	0	0	0	0	0
	Subtotal :	**278**	**2**	**276**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
005	**M5**											
	Lane 1	781	69	712	24	16	28	1	0	0	0	0
	Lane 2	941	17	924	8	6	3	0	0	0	0	0
	Lane 3	1,299	140	1,159	73	17	50	0	0	0	0	0
	Lane 4	1,335	146	1,189	43	53	50	0	0	0	0	0
	Lane 5	839	28	811	7	16	5	0	0	0	0	0
	Lane 6	790	59	731	19	18	22	0	0	0	0	0
	Subtotal :	**5,985**	**459**	**5,526**	**174**	**126**	**158**	**1**	**0**	**0**	**0**	**0**
015	**Ramp M15**											
	Lane 1	14	0	14	0	0	0	0	0	0	0	0
	Lane 2	6	0	6	0	0	0	0	0	0	0	0
	Lane 3	14	1	13	0	0	1	0	0	0	0	0
	Lane 4	31	0	31	0	0	0	0	0	0	0	0
	Lane 5	16	0	16	0	0	0	0	0	0	0	0
	Lane 6	17	1	16	0	0	1	0	0	0	0	0
	Subtotal :	**98**	**2**	**96**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**
018	**Ramp M18**											
	Lane 1	55	0	55	0	0	0	0	0	0	0	0
	Lane 2	42	0	42	0	0	0	0	0	0	0	0
	Lane 3	53	0	53	0	0	0	0	0	0	0	0
	Lane 4	53	0	53	0	0	0	0	0	0	0	0
	Lane 5	53	0	53	0	0	0	0	0	0	0	0
	Lane 6	35	0	35	0	0	0	0	0	0	0	0
	Subtotal :	**291**	**0**	**291**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Interchange by Lane (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**(All)**	**Audit Status:**	**Audited**	
Interchange:	**(All)**			

DISTRICT 1

MP	Interchange	All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
019	**M19**											
	Lane 1	355	9	346	2	2	5	0	0	0	0	0
	Lane 2	474	4	470	0	2	2	0	0	0	0	0
	Lane 3	14	1	13	0	0	1	0	0	0	0	0
	Lane 4	1,379	190	1,189	91	44	52	3	0	0	0	0
	Lane 5	459	16	443	7	4	5	0	0	0	0	0
	Lane 6	415	21	394	0	17	4	0	0	0	0	0
	Lane 7	1,403	215	1,188	20	137	53	5	0	0	0	0
	Lane 8	15	0	15	0	0	0	0	0	0	0	0
	Lane 9	418	3	415	1	0	2	0	0	0	0	0
	Lane 10	326	6	320	2	1	3	0	0	0	0	0
	Subtotal :	**5,258**	**465**	**4,793**	**123**	**207**	**127**	**8**	**0**	**0**	**0**	**0**
022	**Ramp M22**											
	Lane 1	48	3	45	2	0	1	0	0	0	0	0
	Lane 2	21	1	20	1	0	0	0	0	0	0	0
	Lane 3	34	5	29	1	0	4	0	0	0	0	0
	Lane 4	40	2	38	1	0	1	0	0	0	0	0
	Lane 5	8	0	8	0	0	0	0	0	0	0	0
	Lane 6	32	0	32	0	0	0	0	0	0	0	0
	Subtotal :	**183**	**11**	**172**	**5**	**0**	**6**	**0**	**0**	**0**	**0**	**0**
026	**Ramp M26**											
	Lane 1	147	2	145	2	0	0	0	0	0	0	0
	Lane 2	84	1	83	1	0	0	0	0	0	0	0
	Lane 3	154	2	152	2	0	0	0	0	0	0	0
	Lane 4	165	3	162	2	1	0	0	0	0	0	0
	Lane 5	61	0	61	0	0	0	0	0	0	0	0
	Lane 6	142	2	140	2	0	0	0	0	0	0	0
	Subtotal :	**753**	**10**	**743**	**9**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

Interchange by Lane (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**(All)**	**Audit Status:**	**Audited**	
Interchange:	**(All)**			

DISTRICT 1

MP	Interchange	All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
035	**California**											
	Lane 1	1,574	68	1,506	29	13	25	1	0	0	0	0
	Lane 2	1,524	20	1,504	14	0	6	0	0	0	0	0
	Lane 3	3,493	193	3,300	90	44	55	4	0	0	0	0
	Lane 4	3,529	187	3,342	42	88	52	5	0	0	0	0
	Lane 5	1,381	40	1,341	12	20	8	0	0	0	0	0
	Lane 6	1,953	81	1,872	31	35	14	1	0	0	0	0
	Subtotal :	**13,454**	**589**	**12,865**	**218**	**200**	**160**	**11**	**0**	**0**	**0**	**0**
039	**Ramp M39**											
	Lane 1	281	11	270	2	4	5	0	0	0	0	0
	Lane 2	198	7	191	3	1	3	0	0	0	0	0
	Lane 3	293	12	281	2	4	6	0	0	0	0	0
	Lane 4	158	7	151	2	2	3	0	0	0	0	0
	Subtotal :	**930**	**37**	**893**	**9**	**11**	**17**	**0**	**0**	**0**	**0**	**0**
044	**Ramp M44**											
	Lane 1	150	9	141	2	2	5	0	0	0	0	0
	Lane 2	130	4	126	3	1	0	0	0	0	0	0
	Lane 3	187	13	174	3	3	7	0	0	0	0	0
	Lane 4	86	2	84	1	1	0	0	0	0	0	0
	Subtotal :	**553**	**28**	**525**	**9**	**7**	**12**	**0**	**0**	**0**	**0**	**0**
048	**Ramp M48**											
	Lane 1	856	25	831	14	3	7	1	0	0	0	0
	Lane 2	936	13	923	5	3	5	0	0	0	0	0
	Lane 3	669	18	651	11	1	6	0	0	0	0	0
	Lane 4	1,183	20	1,163	9	4	7	0	0	0	0	0
	Subtotal :	**3,644**	**76**	**3,568**	**39**	**11**	**25**	**1**	**0**	**0**	**0**	**0**

Interchange by Lane (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**(All)**	**Audit Status:**	**Audited**	
Interchange:	**(All)**			

DISTRICT 1

MP	Interchange	All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
052	**M52**											
	Lane 1	689	3	686	1	1	1	0	0	0	0	0
	Lane 2	800	3	797	3	0	0	0	0	0	0	0
	Lane 3	20	0	20	0	0	0	0	0	0	0	0
	Lane 4	1,731	27	1,704	13	3	10	1	0	0	0	0
	Lane 5	303	2	301	2	0	0	0	0	0	0	0
	Lane 6	3	0	3	0	0	0	0	0	0	0	0
	Lane 7	2,109	28	2,081	12	6	10	0	0	0	0	0
	Lane 8	39	0	39	0	0	0	0	0	0	0	0
	Lane 9	736	2	734	2	0	0	0	0	0	0	0
	Lane 10	733	3	730	1	1	1	0	0	0	0	0
	Lane 13	2	0	2	0	0	0	0	0	0	0	0
	Subtotal :	**7,165**	**68**	**7,097**	**34**	**11**	**22**	**1**	**0**	**0**	**0**	**0**
	District Total :	**38,592**	**1,747**	**36,845**	**621**	**574**	**530**	**22**	**0**	**0**	**0**	**0**

Interchange by Lane (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**(All)**	**Audit Status:**	**Audited**	
Interchange:	**(All)**			

SUMMARY

MP	Interchange	All Classes	Class 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
DISTRICT 1												
004	Ramp M4	278	2	276	1	0	1	0	0	0	0	0
005	M5	5,985	459	5,526	174	126	158	1	0	0	0	0
015	Ramp M15	98	2	96	0	0	2	0	0	0	0	0
018	Ramp M18	291	0	291	0	0	0	0	0	0	0	0
019	M19	5,258	465	4,793	123	207	127	8	0	0	0	0
022	Ramp M22	183	11	172	5	0	6	0	0	0	0	0
026	Ramp M26	753	10	743	9	1	0	0	0	0	0	0
035	California	13,454	589	12,865	218	200	160	11	0	0	0	0
039	Ramp M39	930	37	893	9	11	17	0	0	0	0	0
044	Ramp M44	553	28	525	9	7	12	0	0	0	0	0
048	Ramp M48	3,644	76	3,568	39	11	25	1	0	0	0	0
052	M52	7,165	68	7,097	34	11	22	1	0	0	0	0
	District Total :	**38,592**	**1,747**	**36,845**	**621**	**574**	**530**	**22**	**0**	**0**	**0**	**0**
	Grand Total :	**38,592**	**1,747**	**36,845**	**621**	**574**	**530**	**22**	**0**	**0**	**0**	**0**

~ End of Report ~

CRAS0115IcgMonthlyVar

Interchange Monthly Variance

Road Information

Interchange: **05 008 NST**

Reporting Period

05/01/2014

05/31/2014

Interchange : 05 008 NST

Collector Number	Collecter Name	Cash Overage	Cash Shortage
2007	MINNIS, MONTELLE M.	$10.55	$0.00
2080	MELLINGER, ALYSSA	1.90	-1.00
2083	EROSENKO, CARLO P.	29.00	-16.35
2098	ROCKOVICH, DEREK M.	3.80	0.00
2099	HANNA, NICOLE E.	2.95	-26.95
2114	MANLEY, ERIC G.	178.85	-6.10
2128	PRIBISCO, CHRISTINA G.	3.24	-0.05
2131	SHIVAK, JOAN M.	0.00	0.00
2141	GOODRICH, LAWRENCE H.	4.40	0.00
2157	BATIE, SHEENA S.	4.70	-2.70
2159	GEORGE, MICHAEL A.	7.25	-1.50
2163	PIRL, TAMMY L.	0.10	-11.40
2182	MILLER, KIRK A.	1.85	0.00
2200	GRICUS, PAUL	4.80	-32.05
2225	COTTS, DAVID A.	0.60	0.00
2227	LUCAS, JOSHUA D.	6.85	-1.40
2240	MASCI, MARK D.	41.17	-132.20
2246	PEREZ, RICHARD A.	0.70	0.00
2254	SHEARER, NICOLE R.	4.90	-8.10
2280	CALABRESE, CRAIG A.	17.55	-7.30
2322	BORSARI, WILLIAM J.	9.25	-8.50
2339	PAVLOSKI, NIKOLAUS J.	33.85	-9.10
2376	VITTECK, AIMEE B.	5.50	-0.50
2443	ROBESON, SCOTT J.	16.60	-28.80
2457	FONTANAZZA, MICHAEL A.	0.40	-1.05
2471	SANTILLI, JAMES A.	8.50	-2.00
2682	MIKULA, PATRICIA M.	3.15	-0.65
2688	SACHS, SUSAN J.	7.50	-10.15
2718	HAYDEN, DENISE L.	92.15	-47.05
2848	GESINSKI, TERRY R.	6.60	-5.10

Interchange Monthly Variance

Road Information
Interchange: 05 008 NST

Reporting Period
05/01/2014
05/31/2014

Interchange : 05 008 NST

Collector Number	Collecter Name	Cash Overage	Cash Shortage
8285	MORELAND, ALEXANDER L.	49.90	-31.43
	Interchange Total:	**$558.56**	**-$391.43**
	Grand Total:	**$558.56**	**-$391.43**

~ End of Report ~

CRAS0104IcgTODSum

Interchange Tour Of Duty Summary

Road Information
Highway: **Toll 76-276**
Interchange: **05 007 IRW**

Data Source
Ticket Transactions

Reporting Period
05/01/2014

05 007 IRW

		Tour Of Duty			Transaction Count				
Collector Number	Collector Name	Start	End	Lane Number	Cash	Charge	Non-Revenue	ETC	Total
2001	GRETCHEN M AGNELLO	05/01/2014 14:46:06	05/01/2014 22:46:00	4	429	0	2	5	436
2007	MONTELLE M MINNIS	05/01/2014 14:44:19	05/01/2014 22:42:10	5	498	0	0	2	500
2106	ROBERT M DOYLE	05/01/2014 06:42:25	05/01/2014 18:30:51	8	754	0	3	4	761
2200	PAUL GRICUS	05/01/2014 06:44:31	05/01/2014 14:45:14	8	418	1	2	3	424
2284	KATHLEEN L RUSSELL	05/01/2014 18:33:01	05/01/2014 21:42:33	8	99	0	1	3	103
2503	LANCE P ALEXANDER	04/30/2014 22:41:14	05/01/2014 06:44:25	4	204	0	2	1	207
2619	JAMES J VOLKAR	05/01/2014 06:01:17	05/01/2014 06:42:04	5	23	0	0	3	26
2622	SUSAN K O'HARE	05/01/2014 06:45:01	05/01/2014 14:45:46	4	314	0	2	2	318
				Total:	**2,739**	**1**	**12**	**23**	**2,775**

~ End of Report ~

CRAS0005UnassignedTxn

Invalid Unassigned Transaction

Road Information

Highway: **Toll 76-276, Toll 476**
Interchange: **05 004 BVL**
Lane: **(All)**

Reporting Period

05/01/2014
05/01/2014

Total Records Shown: **1**
Toll 76-276
05 004 BVL

Exit								Entry												
Coll Num	Lane Num	Lane Type	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	Int ID	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Cash Fare Paid	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
0	6	SX	2112	CASH	05/01/2014 11:00:07	1	2	0	0		0	0	0	1	2	$0.00	$0.00	$0.00			
		Transaction Count :		**1**											**Total :**	**$0.00**	**$0.00**	**$0.00**			

~ End of Report ~

CRTH3410LnSeg

Lane Segment

Road Information

Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Lane: **1**
Lane Type: **Scale Entry**

Reporting Period

05/01/2014
05/01/2014

Highway: Toll 76-276 / Plaza: Irwin / Lane: 1

Segment	Open Collector Card Number	Open Collector Name	Start Date/Time	Close Collector Card Number	Close Collector Name	End Date/Time	ETC	NON ETC	Time
Scale Entry - MIXED MODE EZPASS and Ticket/Cash									
Mixed-Tour out with deposit	82619931958	2619 (A) Volkar, James J.	05/01/2014 09:57:41	88801000000	8801	05/01/2014 23:45:00	700	711	13:47:19
Total for Scale Entry - MIXED MODE EZPASS and Ticket/Cash:									**13:47:19**
Scale Entry - Ticket/Cash Only									
Ticket-Tour out with deposit	82619931958	2619 (A) Volkar, James J.	05/01/2014 09:56:10	82619931958	2619 (A) Volkar, James J.	05/01/2014 09:57:38	0	2	00:01:28
Total for Scale Entry - Ticket/Cash Only:									**00:01:28**
Total for Lane 1:									**13:48:47**

Lane Segment

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Lane: **4**
Lane Type: **Scale Exit**

Reporting Period
05/01/2014
05/01/2014

Highway: Toll 76-276 / Plaza: Irwin / Lane: 4

Segment	Open Collector Card Number	Open Collector Name	Start Date/Time	Close Collector Card Number	Close Collector Name	End Date/Time	ETC	NON ETC	Time
Scale Exit - EZPASS Only									
EZPass-Tour out with deposit	82503005036	2503 (A) Alexander, Lance P.	05/01/2014 06:04:58	82503005036	2503 (A) Alexander, Lance P.	05/01/2014 06:16:41	23	0	00:11:43
EZPass-Tour out with deposit	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:15:28	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:18:29	6	0	00:03:01
EZPass-Tour out with deposit	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:27:41	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:50:02	66	0	00:22:21
EZPass-Tour out with deposit	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 10:59:10	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 11:37:16	53	0	00:38:06
EZPass-Tour out with deposit	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 13:12:57	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 13:34:02	36	0	00:21:05
EZPass-Tour out with deposit	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 15:57:25	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 16:20:24	109	0	00:22:59
EZPass-Tour out with deposit	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 17:57:26	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 18:40:30	190	0	00:43:04
EZPass-Tour out with deposit	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 20:57:39	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 21:20:10	41	0	00:22:31
Total for Scale Exit - EZPASS Only:									**03:04:50**
Scale Exit - Ticket/Cash Only									
Ticket	82503005036	2503 (A) Alexander, Lance P.	04/30/2014 22:41:14	82503005036	2503 (A) Alexander, Lance P.	05/01/2014 06:04:53	1	193	07:23:39
Ticket-Tour out with deposit	82503005036	2503 (A) Alexander, Lance P.	05/01/2014 06:16:45	82503005036	2503 (A) Alexander, Lance P.	05/01/2014 06:44:25	0	13	00:27:40
Ticket	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 06:45:01	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:15:23	0	50	01:30:22
Ticket	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:18:34	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:27:36	0	5	00:09:02
Ticket	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 08:50:07	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 10:59:06	2	81	02:08:59
Ticket	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 11:37:21	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 13:12:52	0	109	01:35:31
Ticket-Tour out with deposit	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 13:34:06	82622006220	2622 (A) O'hare, Susan K.	05/01/2014 14:45:46	0	71	01:11:40
Ticket	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 14:46:06	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 15:57:21	1	106	01:11:15
Ticket	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 16:20:31	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 17:57:22	0	147	01:36:51
Ticket	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 18:40:35	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 20:57:34	4	121	02:16:59
Ticket-Tour out with deposit	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 21:20:15	82001000018	2001 (A) Agnello, Gretchen M	05/01/2014 22:46:00	0	57	01:25:45
Total for Scale Exit - Ticket/Cash Only:									**20:57:43**
Total for Lane 4:									**24:02:33**

Lane Segment

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Lane: **5**
Lane Type: **Scale Exit**

Reporting Period
05/01/2014
05/01/2014

Highway: Toll 76-276 / Plaza: Irwin / Lane: 5

Segment	Open Collector Card Number	Open Collector Name	Start Date/Time	Close Collector Card Number	Close Collector Name	End Date/Time	ETC	NON ETC	Time
Scale Exit - EZPASS Only									
EZPass-Tour out with deposit	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 08:51:22	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 09:12:19	38	0	00:20:57
EZPass-Tour out with deposit	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 11:40:53	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 12:19:01	79	0	00:38:08
EZPass-Tour out with deposit	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 13:34:56	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 13:56:07	48	0	00:21:11
EZPass-Tour out with deposit	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 16:21:43	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 16:42:24	130	0	00:20:41
EZPass-Tour out with deposit	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 18:40:46	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 19:21:56	136	0	00:41:10
EZPass-Tour out with deposit	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 21:21:41	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 21:42:21	36	0	00:20:40
EZPass-Tour out with deposit	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 22:42:16	88801000000	8801	05/01/2014 23:45:00	53	0	01:02:44
Total for Scale Exit - EZPASS Only:									**03:45:31**
Scale Exit - Ticket/Cash Only									
Ticket-Tour out with deposit	82619931958	2619 (A) Volkar, James J.	05/01/2014 06:01:17	82619931958	2619 (A) Volkar, James J.	05/01/2014 06:42:04	3	23	00:40:47
Ticket	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 06:42:25	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 08:51:16	1	106	02:08:51
Ticket	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 09:12:24	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 11:38:21	1	143	02:25:57
Ticket	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 12:19:05	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 13:34:53	1	122	01:15:48
Ticket	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 13:56:10	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 14:43:47	0	57	00:47:37
Ticket	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 14:44:19	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 16:21:39	1	160	01:37:20
Ticket	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 16:42:29	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 18:40:41	1	172	01:58:12
Ticket	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 19:21:59	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 21:21:38	0	120	01:59:39
Ticket-Tour out with deposit	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 21:42:28	82007000079	2007 (A) Minnis, Montelle M	05/01/2014 22:42:10	0	46	00:59:42
Total for Scale Exit - Ticket/Cash Only:									**13:53:53**
Total for Lane 5:									**17:39:24**

Lane Segment

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Lane: **8**
Lane Type: **Scale Exit**

Reporting Period
05/01/2014
05/01/2014

Highway: Toll 76-276 / Plaza: Irwin / Lane: 8

Segment	Open Collector Card Number	Open Collector Name	Start Date/Time	Close Collector Card Number	Close Collector Name	End Date/Time	ETC	NON ETC	Time
Scale Exit - EZPASS Only									
EZPass-Tour out with deposit	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:09:19	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:09:23	0	0	00:00:04
EZPass-Tour out with deposit	82200002005	2200 (A) Gricus, Paul	05/01/2014 09:12:53	82200002005	2200 (A) Gricus, Paul	05/01/2014 09:30:45	14	0	00:17:52
EZPass-Tour out with deposit	82200002005	2200 (A) Gricus, Paul	05/01/2014 12:22:28	82200002005	2200 (A) Gricus, Paul	05/01/2014 13:03:43	40	0	00:41:15
EZPass-Tour out with deposit	82200002005	2200 (A) Gricus, Paul	05/01/2014 13:57:29	82200002005	2200 (A) Gricus, Paul	05/01/2014 14:17:27	25	0	00:19:58
EZPass-Tour out with deposit	82200002005	2200 (A) Gricus, Paul	05/01/2014 14:45:18	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 15:08:34	27	0	00:23:16
EZPass-Tour out with deposit	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 18:30:55	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 18:32:57	3	0	00:02:02
EZPass-Tour out with deposit	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 19:23:39	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 20:54:10	37	0	01:30:31
EZPass-Tour out with deposit	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 21:42:36	88801000000	8801	05/01/2014 23:45:00	25	0	02:02:24
Total for Scale Exit - EZPASS Only:									**05:17:22**
Scale Exit - Ticket/Cash Only									
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 06:44:31	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:09:15	0	16	00:24:44
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:09:27	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:11:43	0	0	00:02:16
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:11:53	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:12:03	0	0	00:00:10
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 07:12:20	82200002005	2200 (A) Gricus, Paul	05/01/2014 09:12:45	3	109	02:00:25
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 09:31:09	82200002005	2200 (A) Gricus, Paul	05/01/2014 12:21:13	0	175	02:50:04
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 12:21:26	82200002005	2200 (A) Gricus, Paul	05/01/2014 12:22:24	0	2	00:00:58
Ticket	82200002005	2200 (A) Gricus, Paul	05/01/2014 13:04:05	82200002005	2200 (A) Gricus, Paul	05/01/2014 13:57:18	0	82	00:53:13
Ticket-Tour out with deposit	82200002005	2200 (A) Gricus, Paul	05/01/2014 14:17:47	82200002005	2200 (A) Gricus, Paul	05/01/2014 14:45:14	0	36	00:27:27
Ticket	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 15:08:38	82106988306	2106 (A) Doyle, Robert M.	05/01/2014 18:30:51	1	329	03:22:13
Ticket	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 18:33:01	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 19:23:36	2	68	00:50:35
Ticket-Tour out with deposit	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 20:54:14	82284002848	2284 (A) Russell, Kathleen L.	05/01/2014 21:42:33	1	32	00:48:19
Total for Scale Exit - Ticket/Cash Only:									**11:40:24**
Total for Lane 8:									**16:57:46**

~ End of Report ~

CRTH1810LnUsg_D

Lane Usage (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**05 007 IRW**	**Audit Status:**	**Audited**	

LANE 1 (ENTRY)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 09:56:03	Mixed	524	265	66.41	33.59
09:56:10 - 09:57:38	Non-ETC Only	0	3	0.00	100.00
09:57:41 - 23:45:00	Mixed	702	726	49.16	50.84
23:45:00 - 23:59:59	Mixed	2	0	100.00	0.00

Lane Usage (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**05 007 IRW**	**Audit Status:**	**Audited**	

LANE 2 (ENTRY)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 23:45:00	Mixed	4,644	97	97.95	2.05
23:45:00 - 23:59:59	Mixed	3	0	100.00	0.00

Lane Usage (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**05 007 IRW**	**Audit Status:**	**Audited**	

LANE 3 (ENTRY)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 23:45:00	Mixed	1,939	1,802	51.83	48.17
23:45:00 - 23:59:59	Mixed	4	2	66.67	33.33

Lane Usage (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014

LANE 4 (EXIT)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 06:04:53	Non-ETC Only	6	131	4.38	95.62
06:04:58 - 06:16:41	ETC Dedicated	23	0	100.00	0.00
06:16:45 - 06:44:25	Non-ETC Only	1	13	7.14	92.86
06:45:01 - 08:15:23	Non-ETC Only	0	50	0.00	100.00
08:15:28 - 08:18:29	ETC Dedicated	6	0	100.00	0.00
08:18:34 - 08:27:36	Non-ETC Only	0	5	0.00	100.00
08:27:41 - 08:50:02	ETC Dedicated	68	0	100.00	0.00
08:50:07 - 10:59:06	Non-ETC Only	3	81	3.57	96.43
10:59:10 - 11:37:16	ETC Dedicated	54	0	100.00	0.00
11:37:21 - 13:12:52	Non-ETC Only	0	109	0.00	100.00
13:12:57 - 13:34:02	ETC Dedicated	39	0	100.00	0.00
13:34:06 - 14:45:46	Non-ETC Only	1	71	1.39	98.61
14:46:06 - 15:57:21	Non-ETC Only	1	106	0.93	99.07
15:57:25 - 16:20:24	ETC Dedicated	112	0	100.00	0.00
16:20:31 - 17:57:22	Non-ETC Only	0	147	0.00	100.00
17:57:26 - 18:40:30	ETC Dedicated	199	0	100.00	0.00
18:40:35 - 20:57:34	Non-ETC Only	5	121	3.97	96.03
20:57:39 - 21:20:10	ETC Dedicated	43	0	100.00	0.00
21:20:15 - 22:46:00	Non-ETC Only	0	57	0.00	100.00
22:46:41 - 23:59:59	Non-ETC Only	1	63	1.56	98.44

Lane Usage (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014

LANE 5 (EXIT)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 06:01:14	ETC Dedicated	186	0	100.00	0.00
06:01:17 - 06:42:04	Non-ETC Only	3	23	11.54	88.46
06:42:25 - 08:51:16	Non-ETC Only	2	106	1.85	98.15
08:51:22 - 09:12:19	ETC Dedicated	39	0	100.00	0.00
09:12:24 - 11:38:21	Non-ETC Only	2	143	1.38	98.62
11:40:53 - 12:19:01	ETC Dedicated	82	0	100.00	0.00
12:19:05 - 13:34:53	Non-ETC Only	2	122	1.61	98.39
13:34:56 - 13:56:07	ETC Dedicated	50	0	100.00	0.00
13:56:10 - 14:43:47	Non-ETC Only	0	57	0.00	100.00
14:44:19 - 16:21:39	Non-ETC Only	3	160	1.84	98.16
16:21:43 - 16:42:24	ETC Dedicated	131	0	100.00	0.00
16:42:29 - 18:40:41	Non-ETC Only	2	172	1.15	98.85
18:40:46 - 19:21:56	ETC Dedicated	139	0	100.00	0.00
19:21:59 - 21:21:38	Non-ETC Only	1	120	0.83	99.17
21:21:41 - 21:42:21	ETC Dedicated	37	0	100.00	0.00
21:42:28 - 22:42:10	Non-ETC Only	3	46	6.12	93.88
22:42:16 - 23:45:00	ETC Dedicated	53	0	100.00	0.00
23:45:00 - 23:59:59	ETC Dedicated	11	0	100.00	0.00

Lane Usage (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**05 007 IRW**	**Audit Status:**	**Audited**	

LANE 6 (EXIT)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 23:45:00	ETC Dedicated	3,577	0	100.00	0.00
23:45:00 - 23:59:59	ETC Dedicated	5	0	100.00	0.00

Lane Usage (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**05 007 IRW**	**Audit Status:**	**Audited**	

LANE 7 (EXIT)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 23:45:00	ETC Dedicated	3,096	1	99.97	0.03
23:45:00 - 23:59:59	ETC Dedicated	7	0	100.00	0.00

Lane Usage (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/01/2014

LANE 8 (EXIT)

Time Period	Lane Mode	ETC Traffic	Non-ETC Traffic	% ETC Traffic	% Non-ETC Traffic
00:00:00 - 06:44:05	ETC Dedicated	52	0	100.00	0.00
06:44:31 - 07:09:15	Non-ETC Only	0	16	0.00	100.00
07:09:19 - 07:09:23	ETC Dedicated	0	0	0.00	0.00
07:09:27 - 07:11:43	Non-ETC Only	0	0	0.00	0.00
07:11:53 - 07:12:03	Non-ETC Only	0	0	0.00	0.00
07:12:20 - 09:12:45	Non-ETC Only	4	110	3.51	96.49
09:12:53 - 09:30:45	ETC Dedicated	14	0	100.00	0.00
09:31:09 - 12:21:13	Non-ETC Only	2	176	1.12	98.88
12:21:26 - 12:22:24	Non-ETC Only	0	2	0.00	100.00
12:22:28 - 13:03:43	ETC Dedicated	40	0	100.00	0.00
13:04:05 - 13:57:18	Non-ETC Only	1	82	1.20	98.80
13:57:29 - 14:17:27	ETC Dedicated	25	0	100.00	0.00
14:17:47 - 14:45:14	Non-ETC Only	0	36	0.00	100.00
14:45:18 - 15:08:34	ETC Dedicated	27	0	100.00	0.00
15:08:38 - 18:30:51	Non-ETC Only	3	329	0.90	99.10
18:30:55 - 18:32:57	ETC Dedicated	3	0	100.00	0.00
18:33:01 - 19:23:36	Non-ETC Only	2	68	2.86	97.14
19:23:39 - 20:54:10	ETC Dedicated	39	0	100.00	0.00
20:54:14 - 21:42:33	Non-ETC Only	1	32	3.03	96.97
21:42:36 - 23:45:00	ETC Dedicated	25	0	100.00	0.00
23:45:00 - 23:59:59	ETC Dedicated	3	0	100.00	0.00

~ End of Report ~

CRTH1950MktPen_R

Market Penetration (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 43 (MF)**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**01 103 M15**	**Audit Status:**	**Audited**	**05/01/2014**

	TRAFFIC: ALL HOURS				TRAFFIC: AM PEAK (5 - 8:59)			TRAFFIC: PM PEAK (3 - 6:59)		
Date	**Total**	**ETC**	**Non - ETC**	**% ETC**	**Total**	**ETC**	**% ETC**	**Total**	**ETC**	**% ETC**
05/01/2014	83	50	33	60.24	10	7	70.00	29	16	55.17
Total:	**83**	**50**	**33**	**60.24**	**10**	**7**	**70.00**	**29**	**16**	**55.17**

~ End of Report ~

CRTH5250CSCTrfRev_R

Non-CSC Accounting Traffic & Revenue (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Agency:	**004 New York State Thruway Auth**	**Audit Status:**	**Audited**	**05/01/2014**

004 New York State Thruway Authority

Cost Center	Interchange	MP	Traffic	Revenue
20120	Pittsburgh	057	1	$0.00
20130	Irwin	067	2	1.72
20140	New Stanton	075	4	93.83
20340	Breezewood	161	11	242.82
20350	Fort Littleton	180	1	28.98
20390	Carlisle	226	5	91.40
20400	Gettysburg Pike	236	5	9.66
20410	Harrisburg West	242	2	4.49
20420	Harrisburg East	247	3	56.24
20430	Lebanon-Lancaster	266	2	0.00
20440	Reading	286	3	23.79
20450	Morgantown	298	2	33.12
20460	Downingtown	312	3	20.00
20480	Valley Forge	326	5	0.00
20500	Fort Washington	339	1	0.00
20510	Willow Grove	343	2	3.12
20520	Bensalem	351	2	4.83
20530	Delaware Valley	358	2	3.10
20540	Delaware River Bridge	359	7	111.73
20550	Mid-County	020	8	0.00
20580	Lansdale	031	1	3.10
20590	Quakertown	044	1	2.08
20600	Lehigh Valley	056	5	11.74
20620	Pocono	095	2	0.00
20640	Wyoming Valley	115	3	21.03
20700	Warrendale	030	12	0.00

Non-CSC Accounting Traffic & Revenue (Date Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Agency:	**004 New York State Thruway Authority**	**Audit Status:**	**Audited**	**05/01/2014**

Total :	**95**		**$766.78**

~ End of Report ~

CRAS0116NonRevCardTxn

Non Revenue Card Transactions

Road Information	*Data Source*	*Reporting Period*
Highway: Toll 76-276, Toll 476	**Ticket Transactions**	**05/2014** **05/2014**

Highway Name: Toll 76-276, Toll 476

Activity Month	Transaction Count
May 2014	43,942
Subtotal:	**43,942**
Grand Total:	**43,942**

~ End of Report ~

CRTH1100OrgDst_Grp

Origin-Destination (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**District 1**	**Audit Status:**	**Audited**	
Entry Interchange:	**05 007 IRW**			
Exit Interchange:	**(All)**			

Entry/Exit ETC

MP	Interchange	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
067	**Irwin**											
057	Pittsburgh	2,300	86	2,214	52	2	9	13	6	3	1	0
067	Irwin	68	21	47	9	3	3	4	0	1	1	0
075	New Stanton	818	120	698	35	4	18	27	15	20	1	0
	Subtotal:	**3,186**	**227**	**2,959**	**96**	**9**	**30**	**44**	**21**	**24**	**3**	**0**
	Total:	**3,186**	**227**	**2,959**	**96**	**9**	**30**	**44**	**21**	**24**	**3**	**0**

Origin-Destination (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**District 1**	**Audit Status:**	**Audited**	
Entry Interchange:	**05 007 IRW**			
Exit Interchange:	**(All)**			

Entry/Exit Non-ETC

MP	Interchange	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
067	**Irwin**											
057	Pittsburgh	1,463	37	1,426	27	3	0	2	1	2	2	0
067	Irwin	7	4	3	0	0	0	0	1	2	1	0
075	New Stanton	385	15	370	11	1	0	1	0	2	0	0
	Subtotal:	**1,855**	**56**	**1,799**	**38**	**4**	**0**	**3**	**2**	**6**	**3**	**0**
	Total:	**1,855**	**56**	**1,799**	**38**	**4**	**0**	**3**	**2**	**6**	**3**	**0**

Origin-Destination (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**District 1**	**Audit Status:**	**Audited**	
Entry Interchange:	**05 007 IRW**			
Exit Interchange:	**(All)**			

Entry/Exit Combined

MP	Interchange	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
067	**Irwin**											
057	Pittsburgh	3,763	123	3,640	79	5	9	15	7	5	3	0
067	Irwin	75	25	50	9	3	3	4	1	3	2	0
075	New Stanton	1,203	135	1,068	46	5	18	28	15	22	1	0
	Subtotal:	**5,041**	**283**	**4,758**	**134**	**13**	**30**	**47**	**23**	**30**	**6**	**0**
	Total:	**5,041**	**283**	**4,758**	**134**	**13**	**30**	**47**	**23**	**30**	**6**	**0**

Origin-Destination (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
District:	**District 1**	**Audit Status:**	**Audited**	
Entry Interchange:	**05 007 IRW**			
Exit Interchange:	**(All)**			

SUMMARY

ETC	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Entry/Exit	3,186	227	2,959	96	9	30	44	21	24	3	0
ETC Grand Total:	**3,186**	**227**	**2,959**	**96**	**9**	**30**	**44**	**21**	**24**	**3**	**0**

Non-ETC	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Entry/Exit	1,855	56	1,799	38	4	0	3	2	6	3	0
Non-ETC Grand Total:	**1,855**	**56**	**1,799**	**38**	**4**	**0**	**3**	**2**	**6**	**3**	**0**

Combined	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Entry/Exit	5,041	283	4,758	134	13	30	47	23	30	6	0
Grand Total:	**5,041**	**283**	**4,758**	**134**	**13**	**30**	**47**	**23**	**30**	**6**	**0**

~ End of Report ~

CRTH3265PlanxPotentialLostRev

Plan X Potential Lost Revenue (Date/Time Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014 00:00:00**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	**05/10/2014 00:09:59**
To Interchange:	**05 007 IRW**			
Travel Direction:	**(All)**	*System Type Information*		
		System Type:	**Ticket System**	

Eastbound / Northbound

From		To		ESTIMATED LOST REVENUE							ESTIMATED TRAFFIC COUNTS						
MP	Interchange	MP	Interchange	Combined			ETC		Non-ETC		Combined			ETC		Non-ETC	
			Classes:	All	1	2-9	1	2-9	1	2-9	All	1	2-9	1	2-9	1	2-9
057	Pittsburgh	067	Irwin	$207.35	$117.68	$89.67	$48.88	$87.62	$68.80	$2.05	120	90	30	47	29	43	1
		Eastbound / Northbound Totals:									**120**	**90**	**30**	**47**	**29**	**43**	**1**
			Actual Totals:	**$207.35**	**$117.68**	**$89.67**	**$48.88**	**$87.62**	**$68.80**	**$2.05**	**120**	**90**	**30**	**47**	**29**	**43**	**1**

Plan X Potential Lost Revenue (Date/Time Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014 00:00:00**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	**05/10/2014 00:09:59**
To Interchange:	**05 007 IRW**			
Travel Direction:	**(All)**	***System Type Information***		
		System Type:	**Ticket System**	

Westbound / Southbound

From		To		ESTIMATED LOST REVENUE							ESTIMATED TRAFFIC COUNTS						
MP	Interchange	MP	Interchange	Combined			ETC		Non-ETC		Combined			ETC		Non-ETC	
			Classes:	All	1	2-9	1	2-9	1	2-9	All	1	2-9	1	2-9	1	2-9
067	Irwin	057	Pittsburgh	$199.72	$121.92	$77.80	$49.92	$67.25	$72.00	$10.55	117	93	24	48	21	45	3
			Westbound / Southbound Totals:								**117**	**93**	**24**	**48**	**21**	**45**	**3**
			Actual Totals:	**$199.72**	**$121.92**	**$77.80**	**$49.92**	**$67.25**	**$72.00**	**$10.55**	**117**	**93**	**24**	**48**	**21**	**45**	**3**

Plan X Potential Lost Revenue (Date/Time Range)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014 00:00:00**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	**05/10/2014 00:09:59**
To Interchange:	**05 007 IRW**			
Travel Direction:	**(All)**	***System Type Information***		
		System Type:	**Ticket System**	

All Directions

From	To	ESTIMATED LOST REVENUE							ESTIMATED TRAFFIC COUNTS						
MP Interchange	MP Interchange	Combined			ETC		Non-ETC		Combined			ETC		Non-ETC	
	Classes:	All	1	2-9	1	2-9	1	2-9	All	1	2-9	1	2-9	1	2-9
057 Pittsburgh	067 Irwin	$407.07	$239.60	$167.47	$98.80	$154.87	$140.80	$12.60	237	183	54	95	50	88	4
	All Directions Totals:								**237**	**183**	**54**	**95**	**50**	**88**	**4**
	Actual Totals:	**$407.07**	**$239.60**	**$167.47**	**$98.80**	**$154.87**	**$140.80**	**$12.60**	**237**	**183**	**54**	**95**	**50**	**88**	**4**

~ End of Report ~

CRAS0201PostBillingAdj

Post Billing Adjustment

Road Information
Highway: **Toll 76-276**
Interchange: **(All)**

Data Source
Adjusted Ticket Transactions
Data Feed Date: **May 01, 2014**

Reporting Period
From: **05/01/2014**
To: **05/31/2014**

Charge Card Account	Charge Card Number	Interchange Name	Collector Num	Collector Name	Trans Date	Trans Number	Transaction Fare Adjustment Amount	Old Fare	New Fare	Field Adjusted	Old Value	New Value	Adjustment Date	Auditor Name
1504	00655	05 042 WRN	2214	Scheidemantel, Danny S.	05/23/2014 16:48:40	1939	$0.00	$0.00	$0.00	EntryPlazaID	0	10	06/09/2014 10:49:22	Johnson, Lisa

Adjustment Reasons:
03. Transaction number 1939 lost ticket in system. Customer found ticket from interchange 10 . Ticket not processed. Difference of $ 0.00

0002	90142	05 010 SOM	2036	Marsh, Lynda A.	05/30/2014 20:19:33	3997	0.00	0.00	0.00	DeleteFlag	0	1	06/09/2014 11:53:28	Longenecker, Tracy

Adjustment Reasons:
07. Collector failed to error out transaction number 3997. Accounts for $ 0.00

0002	90142	05 010 SOM	2036	Marsh, Lynda A.	05/30/2014 20:19:33	3997	0.00	0.00	0.00	DeleteFlag	1	0	06/09/2014 11:56:28	Longenecker, Tracy

Adjustment Reasons:
19. Transaction number 3997 adjusted in error. Indicate type of error made: (Customer did not have a ticket should LOST TICKET). This adjustment restores the original transaction.

2000	01632	05 004 BVL	2484	Usner, Gregory A.	05/31/2014 23:31:43	1950	0.00	0.00	0.00	EntryPlazaID	42	7	06/10/2014 09:33:02	Yochum, Harry

Adjustment Reasons:
04. Transaction number 1950 no-read for entry interchange 42 , should be entry interchange 7 . Accounts for $ 0.00

0047	90242	05 026 FOW	3172	Rockemore, Jacqueline E.	05/30/2014 15:53:27	4423	0.00	0.00	0.00	DeleteFlag	0	1	06/10/2014 14:29:39	Longenecker, Tracy

Adjustment Reasons:
16. Transaction number 4423 Processed and No Read. Accounts for $ 0.00

Post Billing Adjustment

Road Information
Highway: **Toll 76-276**
Interchange: **(All)**

Data Source
Adjusted Ticket Transactions
Data Feed Date: **May 01, 2014**

Reporting Period
From: **05/01/2014**
To: **05/31/2014**

Charge Card Account	Charge Card Number	Interchange Name	Collector Num	Collector Name	Trans Date	Trans Number	Transaction Fare Adjustment Amount	Old Fare	New Fare	Field Adjusted	Old Value	New Value	Adjustment Date	Auditor Name

~ End of Report ~

CRAS0111RevSum

Revenue Summary

Road Information
Interchange: **(All)**

Data source
Ticket Transactions

Reporting Period
05/10/2014 00:00:00
05/10/2014 00:09:59

05 024 VAF

			Tour of Duty										Transaction Count				
Lanes	Coll Num	Collector Name	Start	End	Cash Fare Paid	Total Cash Fare Paid Adj	Deposit	Other Adjust-ments	Variance	Charge Fare Paid	Insuf Funds	Cash	Charge	Non-Rev	ETC	Total
12	2149	DESAI, ALAY S.	05/09/2014 21:38:11	05/10/2014 00:00:00	$943.75	$0.00	$946.05	$0.00	$2.30	$0.00	$32.80	150	0	1	1	152
				Interchange Total:	**$943.75**	**$0.00**	**$946.05**	**$0.00**	**$2.30**	**$0.00**	**$32.80**	**150**	**0**	**1**	**1**	**152**

Revenue Summary

Road Information
Interchange: (All)

Data source
Ticket Transactions

Reporting Period
05/10/2014 00:00:00
05/10/2014 00:09:59

05 030 DRB

			Tour of Duty										Transaction Count				
Lanes	Coll Num	Collector Name	Start	End	Cash Fare Paid	Total Cash Fare Paid Adj	Deposit	Other Adjust-ments	Variance	Charge Fare Paid	Insuf Funds	Cash	Charge	Non-Rev	ETC	Total
6, 7	2408	HOWLETT, THOMAS A.	05/09/2014 23:00:25	05/10/2014 00:02:07	$301.20	$0.00	$301.00	$0.00	-$0.20	$0.00	$0.00	50	0	0	0	50
				Interchange Total:	**$301.20**	**$0.00**	**$301.00**	**$0.00**	**-$0.20**	**$0.00**	**$0.00**	**50**	**0**	**0**	**0**	**50**

Revenue Summary

Road Information
Interchange: (All)

Data source
Ticket Transactions

Reporting Period
05/10/2014 00:00:00
05/10/2014 00:09:59

06 039 MIC

			Tour of Duty										Transaction Count				
Lanes	Coll Num	Collector Name	Start	End	Cash Fare Paid	Total Cash Fare Paid Adj	Deposit	Other Adjust-ments	Variance	Charge Fare Paid	Insuf Funds	Cash	Charge	Non-Rev	ETC	Total
14	2286	WEEKS, STEVEN	05/09/2014 21:53:22	05/10/2014 00:03:28	$1,060.80	$0.00	$1,062.81	$0.00	$2.01	$0.00	$67.60	236	0	0	1	237
				Interchange Total:	**$1,060.80**	**$0.00**	**$1,062.81**	**$0.00**	**$2.01**	**$0.00**	**$67.60**	**236**	**0**	**0**	**1**	**237**

~ End of Report ~

CRTH2320Spd_M

Speed (Monthly)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/01/2014**
Interchange:	**05 007 IRW**	**Audit Status:**	**11 Day(s) Unaudited**	**05/31/2014**

067 Irwin	0 - 5 MPH	6 - 10 MPH	11 - 15 MPH	16 - 20 MPH	21 - 25 MPH	26 + MPH
Lane 1	10,317	24,255	7,320	12,237	6,957	2,493
Lane 2	1,906	8,860	35,671	58,037	23,018	5,816
Lane 3	12,129	47,358	13,377	20,046	11,412	3,779
Lane 4	814	10,374	23,476	6,435	3,786	761
Lane 5	1,757	25,674	11,888	8,693	3,315	528
Lane 6	941	5,674	24,927	43,901	18,176	3,333
Lane 7	867	4,761	19,579	37,101	16,259	2,915
Lane 8	1,621	23,435	3,736	3,721	1,395	326
Lane 99	13	0	0	0	0	0
Total:	**30,365**	**150,391**	**139,974**	**190,171**	**84,318**	**19,951**

~ End of Report ~

CRAS0120TollRestMemo

Toll Restitution Memo

From : Director of Fare Collection
To : Secretary-Treasurer

Road Information
District: (All)
Interchange: (All)

Reporting Period
05/01/2014
05/10/2014

Collector Number	Collector Name	Shortage Date	Shortage Amount	Payment Number	Amount Paid	Check Number	Date Paid
2042	Occhiolini, Luke J.	02/08/2014	$5.65	1	$5.65	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	02/08/2014	5.15	1	5.15	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	02/10/2014	7.35	1	7.35	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	02/20/2014	7.35	1	7.35	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	03/02/2014	15.40	1	15.40	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	03/05/2014	16.40	1	16.40	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	03/11/2014	13.15	1	13.15	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
2042	Occhiolini, Luke J.	03/27/2014	24.55	1	24.55	1000013840	05/01/2014
	Comments: 05/01/2014 - Final paycheck deduction						
		Total Shortages:	$95.00	**Total Payments:**	$95.00		

~ End of Report ~

CRAS0113TODRerun

Tour Of Duty Rerun

Road Information
Highway: **Toll 66 (AKH)**
Interchange: **(All)**

Data Source
Ticket Transactions

Reporting Period
05/01/2014
05/10/2014

03 131 M66

		Tour Of Duty		Rerun Processing Information							
Coll Num	Collector Name	Start	End	Rerun Date/Time	Past Data Feed	Adjusted Tour	Normal Rollback	Unadj. Tour Post Day Open	Late Trans Indicated Cash	Late Trans Cash Count	Lane Num
2942	WEDEL, GREGORY R.	05/09/2014 06:45:43	05/09/2014 14:43:33	5/15/2014 1:23:16				YES	$0.00	0	
								Total :	**$0.00**	**0**	

~ End of Report ~

CRTH4000TrfCmp_Fam

Traffic Comparison (Monthly)

Road Information

Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability

ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period

05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

EXIT ETC

	All Classes				Class 1						Class 2 - 9					
			Difference						Difference 05/01/2014 - 05/31/2014						Difference 05/01/2014 - 05/31/2014	
District 1	05/01/2014 - 05/31/2014	05/01/2013 - 05/31/2013			05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		05/01/2013 - 05/31/2013	
MP Interchange	**Count**	**Count**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
067 Irwin	221,387	210,465	10,922	105.19	195,907	88.49	185,443	88.11	10,464	105.64	25,480	11.51	25,022	11.89	458	101.83

Traffic Comparison (Monthly)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

EXIT NON-ETC

	All Classes				Class 1						Class 2 - 9					
			Difference						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013	
District 1	05/01/2014 - 05/31/2014	05/01/2013 - 05/31/2013			05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013				05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013			
MP Interchange	**Count**	**Count**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
067 Irwin	89,624	101,795	(12,171)	88.04	85,335	95.21	96,977	95.27	(11,642)	88.00	4,289	4.79	4,818	4.73	(529)	89.02

Traffic Comparison (Monthly)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

EXIT COMBINED

District 1	All Classes				Class 1						Class 2 - 9					
	05/01/2014 - 05/31/2014	05/01/2013 - 05/31/2013	Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013	
MP Interchange	Count	Count	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
067 Irwin	311,011	312,260	(1,249)	99.60	281,242	90.43	282,420	90.44	(1,178)	99.58	29,769	9.57	29,840	9.56	(71)	99.76

Traffic Comparison (Monthly)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

ENTRY ETC

	All Classes				Class 1						Class 2 - 9					
			Difference						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013	
District 1	05/01/2014 - 05/31/2014	05/01/2013 - 05/31/2013			05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013				05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013			
MP Interchange	**Count**	**Count**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
067 Irwin	209,596	198,851	10,745	105.40	184,338	87.95	174,806	87.91	9,532	105.45	25,258	12.05	24,045	12.09	1,213	105.04

Traffic Comparison (Monthly)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

ENTRY NON-ETC

	All Classes				Class 1						Class 2 - 9					
			Difference						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013	
District 1	05/01/2014 - 05/31/2014	05/01/2013 - 05/31/2013			05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013				05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013			
MP Interchange	**Count**	**Count**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
067 Irwin	92,053	104,434	(12,381)	88.14	86,345	93.80	98,269	94.10	(11,924)	87.87	5,708	6.20	6,165	5.90	(457)	92.59

Traffic Comparison (Monthly)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

ENTRY COMBINED

	All Classes				Class 1						Class 2 - 9					
			Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013						Difference 05/01/2014 - 05/31/2014 05/01/2013 - 05/31/2013	
District 1	05/01/2014 - 05/31/2014	05/01/2013 - 05/31/2013			05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013				05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013			
MP Interchange	**Count**	**Count**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
067 Irwin	301,649	303,285	(1,636)	99.46	270,683	89.73	273,075	90.04	(2,392)	99.12	30,966	10.27	30,210	9.96	756	102.50

Note: ######## indicates a high percentage due to lack of complete data in a selected range.

~ End of Report ~

CRTH1000TrfCnt_Grp

Traffic Counts (Daily)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: (All)

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Unaudited

Reporting Period
06/10/2014

EXIT TRAFFIC COUNTS

District 1

MP	Interchange	Class	Combined Revenue	Combined Non-Rev	Combined Total	Non - ETC Cash	Non - ETC Charge	Non - ETC Non-Rev	Non - ETC Total	ETC Revenue	ETC Non-Rev	ETC Total
057	Pittsburgh	Class 1	17,846	283	18,129	5,343	0	33	5,376	12,503	250	12,753
		Class 2 - 9	2,184	58	2,242	321	0	16	337	1,863	42	1,905
		All Classes	**20,030**	**341**	**20,371**	**5,664**	**0**	**49**	**5,713**	**14,366**	**292**	**14,658**
067	Irwin	Class 1	9,535	163	9,698	2,671	0	21	2,692	6,864	142	7,006
		Class 2 - 9	1,210	26	1,236	151	0	6	157	1,059	20	1,079
		All Classes	**10,745**	**189**	**10,934**	**2,822**	**0**	**27**	**2,849**	**7,923**	**162**	**8,085**
075	New Stanton	Class 1	8,425	218	8,643	2,936	0	41	2,977	5,489	177	5,666
		Class 2 - 9	5,191	138	5,329	839	16	13	868	4,336	125	4,461
		All Classes	**13,616**	**356**	**13,972**	**3,775**	**16**	**54**	**3,845**	**9,825**	**302**	**10,127**
District 1 Subtotal:		Class 1	35,806	664	36,470	10,950	0	95	11,045	24,856	569	25,425
		Class 2 - 9	8,585	222	8,807	1,311	16	35	1,362	7,258	187	7,445
		All Classes	**44,391**	**886**	**45,277**	**12,261**	**16**	**130**	**12,407**	**32,114**	**756**	**32,870**

Traffic Counts (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Unaudited**

Reporting Period
06/10/2014

ENTRY TRAFFIC COUNTS

District 1

MP	Interchange	Class	Combined Revenue	Combined Non-Revenue	Combined Total	Non - ETC Total	ETC Revenue	ETC Non-Revenue	ETC Total
057	**Pittsburgh**	Class 1	18,266	59	18,325	5,558	12,708	59	12,767
		Class 2 - 9	2,136	4	2,140	392	1,744	4	1,748
		All Classes	**20,402**	**63**	**20,465**	**5,950**	**14,452**	**63**	**14,515**
067	**Irwin**	Class 1	9,372	28	9,400	2,798	6,574	28	6,602
		Class 2 - 9	1,275	1	1,276	218	1,057	1	1,058
		All Classes	**10,647**	**29**	**10,676**	**3,016**	**7,631**	**29**	**7,660**
075	**New Stanton**	Class 1	8,598	36	8,634	3,236	5,362	36	5,398
		Class 2 - 9	4,835	10	4,845	1,026	3,809	10	3,819
		All Classes	**13,433**	**46**	**13,479**	**4,262**	**9,171**	**46**	**9,217**
District 1 Subtotal:		Class 1	36,236	123	36,359	11,592	24,644	123	24,767
		Class 2 - 9	8,246	15	8,261	1,636	6,610	15	6,625
		All Classes	**44,482**	**138**	**44,620**	**13,228**	**31,254**	**138**	**31,392**

~ End of Report ~

CRTH1001TrfCntDirection_Grp

Traffic Counts by Direction (Daily)

Road Information
Highway: **Toll 43 (MF)**
District: **District 1**
Interchange: **01 103 M15**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period
05/10/2014

EXIT TRAFFIC COUNTS

District 1

MP	Interchange	Class	Combined			Non - ETC				ETC		
			Revenue	Non-Rev	Total	Cash	Charge	Non-Rev	Total	Revenue	Non-Rev	Total
015	Ramp M15 - Northbound	Class 1	60	3	63	39	0	0	39	21	3	24
		Class 2 - 9	1	0	1	0	0	0	0	1	0	1
		All Classes	**61**	**3**	**64**	**39**	**0**	**0**	**39**	**22**	**3**	**25**
015	Ramp M15 - Southbound	Class 1	31	2	33	16	0	0	16	15	2	17
		Class 2 - 9	1	0	1	0	0	0	0	1	0	1
		All Classes	**32**	**2**	**34**	**16**	**0**	**0**	**16**	**16**	**2**	**18**

~ End of Report ~

CRTH1200TrfFlw_Grp

Traffic Flow (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	
To Interchange:	**05 007 IRW**			

Eastbound / Northbound - ETC Traffic

From		To		All Classes	Classes 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
MP	Interchange	MP	Interchange											
057	Pittsburgh	067	Irwin	13,527	1,673	11,854	358	64	149	386	315	385	16	0

Traffic Flow (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	
To Interchange:	**05 007 IRW**			

Eastbound / Northbound - Non-ETC Traffic

From		To		All Classes	Classes 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
MP	Interchange	MP	Interchange											
057	Pittsburgh	067	Irwin	8,299	357	7,942	204	27	28	26	18	53	1	0

Traffic Flow (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
From Interchange: **05 006 PIT**
To Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

Eastbound / Northbound - Combined Traffic

From		To		All Classes	Classes 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
MP	Interchange	MP	Interchange											
057	Pittsburgh	067	Irwin	21,826	2,030	19,796	562	91	177	412	333	438	17	0

Traffic Flow (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	
To Interchange:	**05 007 IRW**			

Westbound / Southbound - ETC Traffic

From		To		All Classes	Classes 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
MP	Interchange	MP	Interchange											
067	Irwin	057	Pittsburgh	12,101	1,874	10,227	348	50	145	450	385	488	8	0

Traffic Flow (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	
To Interchange:	**05 007 IRW**			

Westbound / Southbound - Non-ETC Traffic

From		To		All Classes	Classes 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
MP	Interchange	MP	Interchange											
067	Irwin	057	Pittsburgh	8,223	459	7,764	257	37	30	45	31	55	4	0

Traffic Flow (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**05/10/2014**
From Interchange:	**05 006 PIT**	**Audit Status:**	**Audited**	
To Interchange:	**05 007 IRW**			

Westbound / Southbound - Combined Traffic

From		To		All Classes	Classes 2-9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
MP	Interchange	MP	Interchange											
067	Irwin	057	Pittsburgh	20,324	2,333	17,991	605	87	175	495	416	543	12	0

~ End of Report ~

CRTH3000TrfRev_Fam

Traffic & Revenue (Daily)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: (All)

Data Availability
ETC: Correlated/Unadjusted
Audit Status: Unaudited

Reporting Period
06/10/2014

DISTRICT 1

Class 1

Cost Center	Interchange	MP	ETC Traffic	ETC Revenue	Non-ETC Cash Traffic	Non-ETC Cash Revenue	Non-ETC Charge Traffic	Non-ETC Charge Revenue	Non-ETC Total Traffic	Non-ETC Total Revenue	Combined Traffic	Combined Revenue
20120	Pittsburgh	057	12,503	$32,441.68	5,343	$23,119.15	0	$0.00	5,343	$23,119.15	17,846	$55,560.83
20130	Irwin	067	6,864	12,091.80	2,671	7,149.80	0	0.00	2,671	7,149.80	9,535	19,241.60
20140	New Stanton	075	5,489	19,379.47	2,936	22,116.20	0	0.00	2,936	22,116.20	8,425	41,495.67
		District Total:	**24,856**	**$63,912.95**	**10,950**	**$52,385.15**	**0**	**$0.00**	**10,950**	**$52,385.15**	**35,806**	**$116,298.10**

Traffic & Revenue (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Unaudited**

Reporting Period
06/10/2014

DISTRICT 1

Class 2 - 9

Cost Center	Interchange	MP	ETC Traffic	ETC Revenue	Non-ETC Cash Traffic	Non-ETC Cash Revenue	Non-ETC Charge Traffic	Non-ETC Charge Revenue	Non-ETC Total Traffic	Non-ETC Total Revenue	Combined Traffic	Combined Revenue
20120	Pittsburgh	057	1,863	$24,933.49	321	$5,295.25	0	$0.00	321	$5,295.25	2,184	$30,228.74
20130	Irwin	067	1,059	9,730.48	151	1,604.30	0	0.00	151	1,604.30	1,210	11,334.78
20140	New Stanton	075	4,336	135,037.63	839	35,969.10	16	1,431.65	855	37,400.75	5,191	172,438.38
		District Total:	**7,258**	**$169,701.60**	**1,311**	**$42,868.65**	**16**	**$1,431.65**	**1,327**	**$44,300.30**	**8,585**	**$214,001.90**

Traffic & Revenue (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Unaudited**

Reporting Period
06/10/2014

DISTRICT 1

All Classes

Cost Center	Interchange	MP	ETC Traffic	ETC Revenue	Non-ETC Cash Traffic	Non-ETC Cash Revenue	Non-ETC Charge Traffic	Non-ETC Charge Revenue	Non-ETC Total Traffic	Non-ETC Total Revenue	Combined Traffic	Combined Revenue
20120	Pittsburgh	057	14,366	$57,375.17	5,664	$28,414.40	0	$0.00	5,664	$28,414.40	20,030	$85,789.57
20130	Irwin	067	7,923	21,822.28	2,822	8,754.10	0	0.00	2,822	8,754.10	10,745	30,576.38
20140	New Stanton	075	9,825	154,417.10	3,775	58,085.30	16	1,431.65	3,791	59,516.95	13,616	213,934.05
		District Total:	**32,114**	**$233,614.55**	**12,261**	**$95,253.80**	**16**	**$1,431.65**	**12,277**	**$96,685.45**	**44,391**	**$330,300.00**

Traffic & Revenue (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **(All)**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Unaudited**

Reporting Period
06/10/2014

SUMMARY

	CLASS 1		CLASS 2 - 9		ALL CLASSES	
	Traffic	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**
ETC	24,856	$63,912.95	7,258	$169,701.60	32,114	$233,614.55
Non-ETC (Cash)	10,950	52,385.15	1,311	42,868.65	12,261	95,253.80
Non-ETC (Charge)	0	0.00	16	1,431.65	16	1,431.65
Non-ETC (Total)	**10,950**	**52,385.15**	**1,327**	**44,300.30**	**12,277**	**96,685.45**
Combined	**35,806**	**$116,298.10**	**8,585**	**$214,001.90**	**44,391**	**$330,300.00**

~ End of Report ~

CRTH4100TrfRevCmp_Fam

Traffic & Revenue Comparison (Monthly)

Road Information
Highway: Toll 76-276, Toll 476
District: District 1
Interchange: 05 007 IRW

Data Availability
ETC: Correlated/Unadjusted
Audit Status Range 1: 11 Day(s) Unaudited
Audit Status Range 2: Audited

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

ETC	Class 1				Class 2 - 9				All Classes			
District 1	05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013	
MP Interchange	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**
067 Irwin	190,298	$372,378.24	181,091	$346,379.92	24,502	$225,103.53	24,361	$231,405.59	214,800	$597,481.77	205,452	$577,785.51

Traffic & Revenue Comparison (Monthly)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status Range 1: **11 Day(s) Unaudited**
Audit Status Range 2: **Audited**

Reporting Period

05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

Non-ETC	Class 1				Class 2 - 9				All Classes			
District 1	05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013		05/01/2014 - 05/31/2014		05/01/2013 - 05/31/2013	
MP Interchange	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**
067 Irwin	84,810	$256,083.20	96,541	$254,892.53	4,050	$35,348.70	4,727	$35,525.20	88,860	$291,431.90	101,268	$290,417.73

Traffic & Revenue Comparison (Monthly)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **05 007 IRW**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status Range 1: **11 Day(s) Unaudited**
Audit Status Range 2: **Audited**

Reporting Period
05/01/2014 - 05/31/2014 vs.
05/01/2013 - 05/31/2013

Combined	Class 1				Class 2 - 9				All Classes			
District 1	**05/01/2014 - 05/31/2014**		**05/01/2013 - 05/31/2013**		**05/01/2014 - 05/31/2014**		**05/01/2013 - 05/31/2013**		**05/01/2014 - 05/31/2014**		**05/01/2013 - 05/31/2013**	
MP Interchange	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**	**Traffic**	**Revenue**
067 Irwin	275,108	$628,461.44	277,632	$601,272.45	28,552	$260,452.23	29,088	$266,930.79	303,660	$888,913.67	306,720	$868,203.24

~ End of Report ~

CRAS0005UnassignedTxn

Unassigned Transaction

Road Information

Highway: **Toll 76-276, Toll 476**
Interchange: **(All)**
Lane: **(All)**

Reporting Period

05/10/2014
05/10/2014

Total Records Shown: **1**
Toll 76-276
05 030 DRB

Exit								Entry												
Coll Num	Lane Num	Lane Type	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	Int ID	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Cash Fare Paid	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Code
4628	7	SX	3296	CASH	05/10/2014 23:25:42	0	0	0	0		0	0	0	0	2		$0.00	$0.00		YES	31
		Transaction Count :		**1**											**Total :**		**$0.00**	**$0.00**			

~ End of Report ~

CRTH2255UO_T

Unusual Occurrence (Date/Time Range)

Road Information

Highway: Toll 76-276, Toll 476
Interchange: 05 007 IRW
Lane: 4 (Plaza '05 007 IRW')
UO Code: (All)

Reporting Period

From: 05/10/2014 00:00:00
To: 05/10/2014 05:27:59

Lane	Date/Time	Lane Mode	Lane Status	Byte Number	Bit Number	Transaction	Description
4	05/10/2014 00:01:29	Non-ETC Only	Open	10	2	5632	Vehicle left during processing
	05/10/2014 00:05:02	Non-ETC Only	Open	12	3	5635	RCPT issued
	05/10/2014 00:07:12	Non-ETC Only	Open	8	0	5637	U-Turn key
	05/10/2014 00:07:12	Non-ETC Only	Open	8	1	5637	Authorized, zero fare
	05/10/2014 00:07:49	Non-ETC Only	Open	12	3	5638	RCPT issued
	05/10/2014 00:22:26	Non-ETC Only	Open	10	2	5652	Vehicle left during processing
	05/10/2014 00:22:55	Non-ETC Only	Open	12	3	5653	RCPT issued
	05/10/2014 00:23:53	Non-ETC Only	Open	12	3	5654	RCPT issued
	05/10/2014 00:39:35	Non-ETC Only	Open	10	2	5665	Vehicle left during processing
	05/10/2014 00:48:30	Non-ETC Only	Open	12	3	5669	RCPT issued
	05/10/2014 00:50:56	Non-ETC Only	Open	12	3	5671	RCPT issued
	05/10/2014 00:52:10	Non-ETC Only	Open	12	3	5673	RCPT issued
	05/10/2014 00:56:31	Non-ETC Only	Open	12	3	5677	RCPT issued
	05/10/2014 01:03:16	Non-ETC Only	Open	10	2	5684	Vehicle left during processing
	05/10/2014 01:08:20	Non-ETC Only	Open	7	6	5688	INSUFFICIENT FUNDS
	05/10/2014 01:08:20	Non-ETC Only	Open	12	4	5688	COP Issued
	05/10/2014 01:08:20	Non-ETC Only	Open	17	0	5688	Valid license read mag stripe
	05/10/2014 01:13:02	Non-ETC Only	Open	12	3	5690	RCPT issued
	05/10/2014 01:17:03	Non-ETC Only	Open	12	3	5697	RCPT issued
	05/10/2014 01:18:49	Non-ETC Only	Open	20	1	5698	Late TVP response
	05/10/2014 01:22:58	Non-ETC Only	Open	3	3	5700	Automatic reclass (X < E)
	05/10/2014 01:24:56	Non-ETC Only	Open	12	3	5704	RCPT issued
	05/10/2014 01:26:56	Non-ETC Only	Open	10	2	5706	Vehicle left during processing
	05/10/2014 01:27:04	Non-ETC Only	Open	10	2	5707	Vehicle left during processing
	05/10/2014 01:30:57	Non-ETC Only	Open	10	2	5711	Vehicle left during processing

Unusual Occurrence (Date/Time Range)

Road Information

Highway: **Toll 76-276, Toll 476**
Interchange: **05 007 IRW**
Lane: **4 (Plaza '05 007 IRW')**
UO Code: **(All)**

Reporting Period

From: 05/10/2014 00:00:00
To: 05/10/2014 05:27:59

Lane	Date/Time	Lane Mode	Lane Status	Byte Number	Bit Number	Transaction	Description
4	05/10/2014 01:44:48	Non-ETC Only	Open	7	6	5718	INSUFFICIENT FUNDS
	05/10/2014 01:44:48	Non-ETC Only	Open	12	3	5718	RCPT issued
	05/10/2014 01:44:48	Non-ETC Only	Open	12	4	5718	COP Issued
	05/10/2014 01:44:48	Non-ETC Only	Open	17	0	5718	Valid license read mag stripe
	05/10/2014 01:52:03	Non-ETC Only	Open	12	3	5720	RCPT issued
	05/10/2014 02:00:55	Non-ETC Only	Open	10	2	5725	Vehicle left during processing
	05/10/2014 02:07:31	Non-ETC Only	Open	10	2	5728	Vehicle left during processing
	05/10/2014 02:09:32	Non-ETC Only	Open	12	3	5729	RCPT issued
	05/10/2014 02:19:04	Non-ETC Only	Open	10	2	5731	Vehicle left during processing
	05/10/2014 03:12:40	Non-ETC Only	Open	12	3	5745	RCPT issued
	05/10/2014 03:20:05	Non-ETC Only	Open	10	2	5748	Vehicle left during processing
	05/10/2014 03:24:35	Non-ETC Only	Open	10	2	5750	Vehicle left during processing
	05/10/2014 03:26:40	Non-ETC Only	Open	12	3	5752	RCPT issued
	05/10/2014 03:48:18	Non-ETC Only	Open	10	2	5760	Vehicle left during processing
	05/10/2014 03:48:26	Non-ETC Only	Open	12	3	5761	RCPT issued
	05/10/2014 04:15:31	Non-ETC Only	Open	12	3	5768	RCPT issued
	05/10/2014 04:30:00	Non-ETC Only	Open	12	3	5773	RCPT issued
	05/10/2014 04:49:47	Non-ETC Only	Open	10	2	5783	Vehicle left during processing
	05/10/2014 05:20:13	Non-ETC Only	Open	12	3	5791	RCPT issued

~ End of Report ~

Vehicle Counts Through a Closed Lane

Road Information

Highway: **Gateway Barrier**
Interchange: **(All)**

Report Period

05/10/2014 00:00:00
05/10/2014 05:27:59

Total Records Shown: **3**

Gateway Barrier

Exit							Entry													
Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	Int ID	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Codes
4	Ticket	8909	CASH	05/10/2014 00:55:55	0	0	0	0		0	0	0	0	2	$0.00	$0.00			31
														Total :	**$0.00**	**$0.00**			

Vehicle Counts Through a Closed Lane

Road Information
Highway: **Toll 476**
Interchange: **(All)**

Report Period
05/10/2014 00:00:00
05/10/2014 05:27:59

Total Records Shown: **3**

Lehigh Valley

Exit							Entry													
Lane Num	Lane Mode	Trans Num	Trans Type	Transaction Date Time	Coll Class	Coll Axles	Int ID	Lane Num	Date	Trans Num	Class	Axles	Pre-Class Class	Pre-Class Axles	Fare Paid	Insuffi-cient Funds	Card Number	Not Count	Error Exception Codes
10	Ticket	3181	CASH	05/10/2014 04:35:54	0	0	0	0		0	0	0	0	1	$0.00	$0.00			31
9	Ticket	3235	CASH	05/10/2014 05:11:51	0	0	0	0		0	0	0	0	2	0.00	0.00			31
														Total :	**$0.00**	**$0.00**			

~ End of Report ~

CRTH1500VehMlg_Grp

Vehicles & Mileage (Daily)

Road Information

Highway: Toll 76-276, Toll 476
District: District 1
From Interchange: 05 006 PIT
To Interchange: 05 007 IRW

Data Availability

ETC: Correlated/Unadjusted
Audit Status: Audited

Reporting Period

05/10/2014

EXIT TRAFFIC

MP	Interchange	All Classes			Class 1			Class 2-9		
		ETC	Non-ETC	Combined	ETC	Non-ETC	Combined	ETC	Non-ETC	Combined
057	Pittsburgh	10,344	6,972	17,316	9,692	6,786	16,478	652	186	838
067	Irwin	5,435	3,088	8,523	4,999	3,015	8,014	436	73	509
	Subtotal :	**15,779**	**10,060**	**25,839**	**14,691**	**9,801**	**24,492**	**1,088**	**259**	**1,347**

Vehicles & Mileage (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
From Interchange: **05 006 PIT**
To Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

ENTRY TRAFFIC

MP	Interchange	All Classes			Class 1			Class 2-9		
		ETC	Non-ETC	Combined	ETC	Non-ETC	Combined	ETC	Non-ETC	Combined
057	Pittsburgh	10,295	7,364	17,659	9,665	7,138	16,803	630	226	856
067	Irwin	5,183	3,100	8,283	4,771	2,977	7,748	412	123	535
	Subtotal :	**15,478**	**10,464**	**25,942**	**14,436**	**10,115**	**24,551**	**1,042**	**349**	**1,391**

Vehicles & Mileage (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
From Interchange: **05 006 PIT**
To Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

TRAFFIC BETWEEN INTERCHANGES

				All Classes			Class 1			Class 2-9		
MP	**Interchange**	**MP**	**Interchange**	**ETC**	**Non-ETC**	**Combined**	**ETC**	**Non-ETC**	**Combined**	**ETC**	**Non-ETC**	**Combined**
057	Pittsburgh	067	Irwin	25,628	16,522	42,150	22,081	15,706	37,787	3,547	816	4,363
			Subtotal :	**25,628**	**16,522**	**42,150**	**22,081**	**15,706**	**37,787**	**3,547**	**816**	**4,363**

Vehicles & Mileage (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
From Interchange: **05 006 PIT**
To Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

MILES TRAVELED

				All Classes			Class 1			Class 2-9		
MP	**Interchange**	**MP**	**Interchange**	**ETC**	**Non-ETC**	**Combined**	**ETC**	**Non-ETC**	**Combined**	**ETC**	**Non-ETC**	**Combined**
057	Pittsburgh	067	Irwin	279,345	180,089	459,435	240,682	171,195	411,878	38,662	8,894	47,556
			Subtotal :	**279,345**	**180,089**	**459,435**	**240,682**	**171,195**	**411,878**	**38,662**	**8,894**	**47,556**

Vehicles & Mileage (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
From Interchange: **05 006 PIT**
To Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

SUMMARY : TOTAL TRAFFIC

	EXIT			ENTRY		
	All Classes	**Class 1**	**Class 2-9**	**All Classes**	**Class 1**	**Class 2-9**
ETC	15,779	14,691	1,088	15,478	14,436	1,042
Non-ETC	10,060	9,801	259	10,464	10,115	349
Combined	**25,839**	**24,492**	**1,347**	**25,942**	**24,551**	**1,391**

SUMMARY : TRAFFIC BETWEEN INTERCHANGES

	All Classes	**Class 1**	**Class 2-9**
ETC	25,628	22,081	3,547
Non-ETC	16,522	15,706	816
Combined	**42,150**	**37,787**	**4,363**

SUMMARY : TOTAL MILES TRAVELED

	All Classes	**Class 1**	**Class 2-9**
ETC	279,345	240,682	38,662
Non-ETC	180,089	171,195	8,894
Combined	**459,435**	**411,878**	**47,556**

Vehicles & Mileage (Daily)

Road Information

Highway: **Toll 76-276, Toll 476**
District: **District 1**
From Interchange: **05 006 PIT**
To Interchange: **05 007 IRW**

Data Availability

ETC: **Correlated/Unadjusted**
Audit Status: **Audited**

Reporting Period

05/10/2014

~ End of Report ~

CRAS0112VerifiedBnkDepDaily

Verified Bank Deposit Daily Report

Bank Information	*Data Source*	*Reporting Period*
Bank Name: Penn Security	**Bank Deposits**	**05/10/2014**

Bank Name: Penn Security

District Name	Interchange		Deposit Amount: Assigned TOD	Unassigned TOD	Shortage	Total
Penn Security District						
	04 101 KEA		$3,606.79	$0.00	$0.00	$3,606.79
	04 102 CLS		4,638.42	0.00	0.00	4,638.42
		District Totals:	**$8,245.21**	**$0.00**	**$0.00**	**$8,245.21**

Verified Bank Deposit Daily Report

Bank Information	*Data Source*	*Reporting Period*
Bank Name: Penn Security	**Bank Deposits**	**05/10/2014**

	Total Deposits by Bank
Penn Security	$8,245.21
Total	**$8,245.21**

~ End of Report ~

Verified Bank Deposits By Bank (Daily)

Data Source
Ticket Transactions and Bank Deposits

Reporting Period
05/10/2014

Interchange Groups

Bank District / Bank Name	Deposit Date	Penn Security District	Total
Penn Security	05/10/2014	$8,245.21	$8,245.21
Penn Security Totals		**$8,245.21**	**$8,245.21**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups					
Bank District / Bank Name	**Deposit Date**	**Gateway Barrier**	**Wells Fargo (03-11)**	**Wells Fargo (12-23)**	**Wells Fargo (24-30)**	**Wells Fargo (31-37)**	**Total**
Wells Fargo - Mainline (Toll 76-276, 476)	05/10/2014	$34,847.20	$208,454.70	$197,731.73	$231,378.61	$95,185.60	$767,597.84
Wells Fargo - Mainline (Toll 76-276, 476) Totals		**$34,847.20**	**$208,454.70**	**$197,731.73**	**$231,378.61**	**$95,185.60**	**$767,597.84**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups					
Bank District / Bank Name	**Deposit Date**	**Rte 136**	**AKH Mainline**	**Route 30**	**Route 130**	**Route 66**	**Total**
Wells Fargo (AKH)	05/10/2014	$0.00	$12,072.35	$3,040.37	$0.00	$1,842.62	$16,955.34
Wells Fargo (AKH) Totals		**$0.00**	**$12,072.35**	**$3,040.37**	**$0.00**	**$1,842.62**	**$16,955.34**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups					
Bank District / Bank Name	**Deposit Date**	**Mt Jackson Rte 108**	**West Toll 376**	**Moravia Rte 168**	**Beaver Falls Rte 551**	**East Toll 376**	**Total**
Wells Fargo (BVE)	05/10/2014	$0.00	$7,758.37	$0.00	$1,450.65	$5,897.28	$15,106.30
Wells Fargo (BVE) Totals		**$0.00**	**$7,758.37**	**$0.00**	**$1,450.65**	**$5,897.28**	**$15,106.30**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups			
Bank District / Bank Name	**Deposit Date**	**SB Route 30**	**SB Westport Rd**	**SB Route 22**	**Total**
Wells Fargo (SouthernBeltway)	05/10/2014	$0.00	$1,857.82	$2,226.45	$4,084.27
Wells Fargo (SouthernBeltway) Totals		**$0.00**	**$1,857.82**	**$2,226.45**	**$4,084.27**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups				
Bank District / Bank Name	**Deposit Date**	**Ramp M4**	**M5**	**Ramp M15**	**Ramp M18**	**M19**
Wells Fargo (Mon/Fay)	05/10/2014	$0.00	$0.00	$0.00	$371.17	$0.00
Wells Fargo (Mon/Fay) Totals		**$0.00**	**$0.00**	**$0.00**	**$371.17**	**$0.00**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups				
Bank District / Bank Name	**Deposit Date**	**Ramp M22**	**Ramp M26**	**Ramp M28**	**California**	**Ramp M39**
Wells Fargo (Mon/Fay)	05/10/2014	$0.00	$0.00	$0.00	$9,219.30	$1,274.07
Wells Fargo (Mon/Fay) Totals		**$0.00**	**$0.00**	**$0.00**	**$9,219.30**	**$1,274.07**

Verified Bank Deposits By Bank (Daily)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/10/2014**

		Interchange Groups			
Bank District / Bank Name	**Deposit Date**	**Ramp M44**	**Ramp M48**	**M52**	**Total**
Wells Fargo (Mon/Fay)	05/10/2014	$0.00	$0.00	$3,957.52	$14,822.06
Wells Fargo (Mon/Fay) Totals		**$0.00**	**$0.00**	**$3,957.52**	**$14,822.06**
Grand Total:					**$826,811.02**

~ End of Report ~

CRTH6220VerBnkDpstSum_M

Verified Bank Deposits Summary (Monthly)

Data Source	*Reporting Period*
Ticket Transactions and Bank Deposits	**05/01/2014** **05/31/2014**

Bank Name	Interchange Group	Deposit Amount	Shortage Payments	Total
Penn Security	Penn Security District	$210,926.60	$0.00	$210,926.60
Penn Security Total:		**$210,926.60**	**$0.00**	**$210,926.60**
Wells Fargo - Mainline (Toll 76-276, 476)	Wells Fargo (03-11)	7,629,789.16	0.00	7,629,789.16
	Wells Fargo (12-23)	6,067,745.55	0.00	6,067,745.55
	Wells Fargo (24-30)	6,212,592.92	0.00	6,212,592.92
	Wells Fargo (31-37)	2,507,255.30	0.00	2,507,255.30
Wells Fargo - Mainline (Toll 76-276, 476) Total:		**$22,417,382.93**	**$0.00**	**$22,417,382.93**
Wells Fargo - Ramps (AKH, BVE, M/F, SB)	Wells Fargo (AKH)	488,585.82	0.00	488,585.82
	Wells Fargo (BVE)	460,609.37	0.00	460,609.37
	Wells Fargo (Mon/Fay)	638,335.40	0.00	638,335.40
	Wells Fargo (SouthernBeltway)	73,649.74	0.00	73,649.74
Wells Fargo - Ramps (AKH, BVE, M/F, SB) Total:		**$1,661,180.33**	**$0.00**	**$1,661,180.33**
Grand Total:		**$24,289,489.86**	**$0.00**	**$24,289,489.86**

~ End of Report ~

CRTH2500VioByLn_Grp

Violations by Lane (Daily)

Road Information		*Data Availability*		*Reporting Period*
Highway:	**Toll 76-276, Toll 476**	**ETC:**	**Correlated/Unadjusted**	**06/10/2014**
District:	**District 1**	**Audit Status:**	**Unaudited**	
Interchange:	**05 007 IRW**			

DISTRICT 1

MP Interchange	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
067 Irwin											
Lane 4											
No Tag Read Violation	18	2	16	1	1	0	0	0	0	0	0
No Tag Read VESed	18	2	16	1	1	0	0	0	0	0	0
Lane Total Violations	18	2	16	1	1	0	0	0	0	0	0
Lane Total VESed	18	2	16	1	1	0	0	0	0	0	0
Lane 5											
ETC Violations	1	0	1	0	0	0	0	0	0	0	0
ETC VESed	1	0	1	0	0	0	0	0	0	0	0
No Tag Read Violation	11	1	10	0	0	0	0	0	1	0	0
No Tag Read VESed	11	1	10	0	0	0	0	0	1	0	0
Lane Total Violations	12	1	11	0	0	0	0	0	1	0	0
Lane Total VESed	12	1	11	0	0	0	0	0	1	0	0
Lane 6											
ETC Violations	9	0	9	0	0	0	0	0	0	0	0
ETC VESed	9	0	9	0	0	0	0	0	0	0	0
No Tag Read Violation	55	13	42	5	1	2	2	1	2	0	0
No Tag Read VESed	55	13	42	5	1	2	2	1	2	0	0
Lane Total Violations	64	13	51	5	1	2	2	1	2	0	0
Lane Total VESed	64	13	51	5	1	2	2	1	2	0	0
Lane 7											
ETC Violations	5	0	5	0	0	0	0	0	0	0	0
ETC VESed	5	0	5	0	0	0	0	0	0	0	0
No Tag Read Violation	42	4	38	2	0	1	0	0	1	0	0
No Tag Read VESed	42	4	38	2	0	1	0	0	1	0	0
Lane Total Violations	47	4	43	2	0	1	0	0	1	0	0
Lane Total VESed	47	4	43	2	0	1	0	0	1	0	0
Lane 8											

Violations by Lane (Daily)

Road Information
Highway: **Toll 76-276, Toll 476**
District: **District 1**
Interchange: **05 007 IRW**

Data Availability
ETC: **Correlated/Unadjusted**
Audit Status: **Unaudited**

Reporting Period
06/10/2014

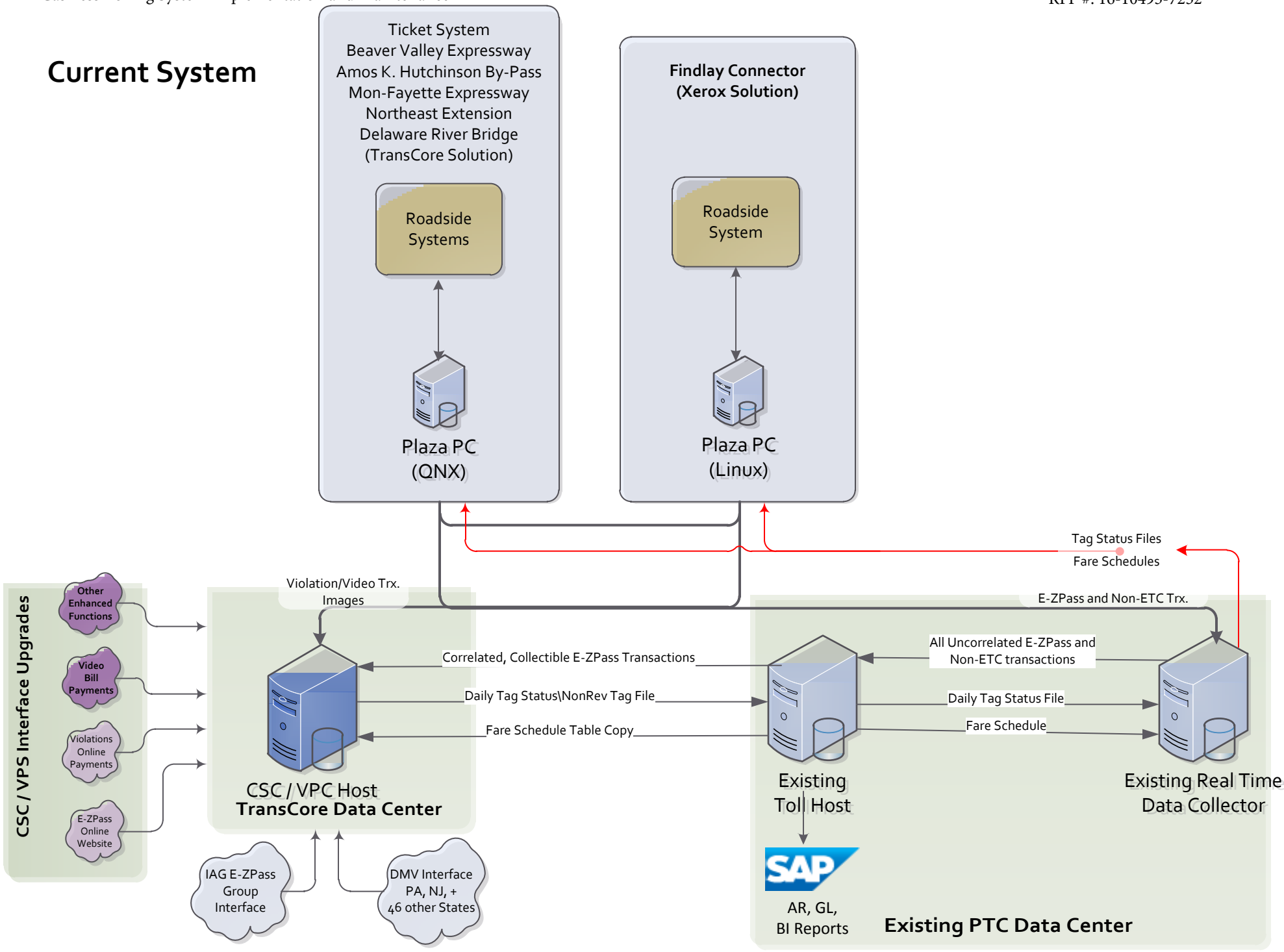
DISTRICT 1

MP Interchange	All Classes	Class 2 - 9	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
ETC Violations	1	0	1	0	0	0	0	0	0	0	0
ETC VESed	1	0	1	0	0	0	0	0	0	0	0
No Tag Read Violation	2	0	2	0	0	0	0	0	0	0	0
No Tag Read VESed	2	0	2	0	0	0	0	0	0	0	0
Lane Total Violations	3	0	3	0	0	0	0	0	0	0	0
Lane Total VESed	3	0	3	0	0	0	0	0	0	0	0
Interchange Total:	**144**	**20**	**124**	**8**	**2**	**3**	**2**	**1**	**4**	**0**	**0**
Interchange Total VESed:	**144**	**20**	**124**	**8**	**2**	**3**	**2**	**1**	**4**	**0**	**0**

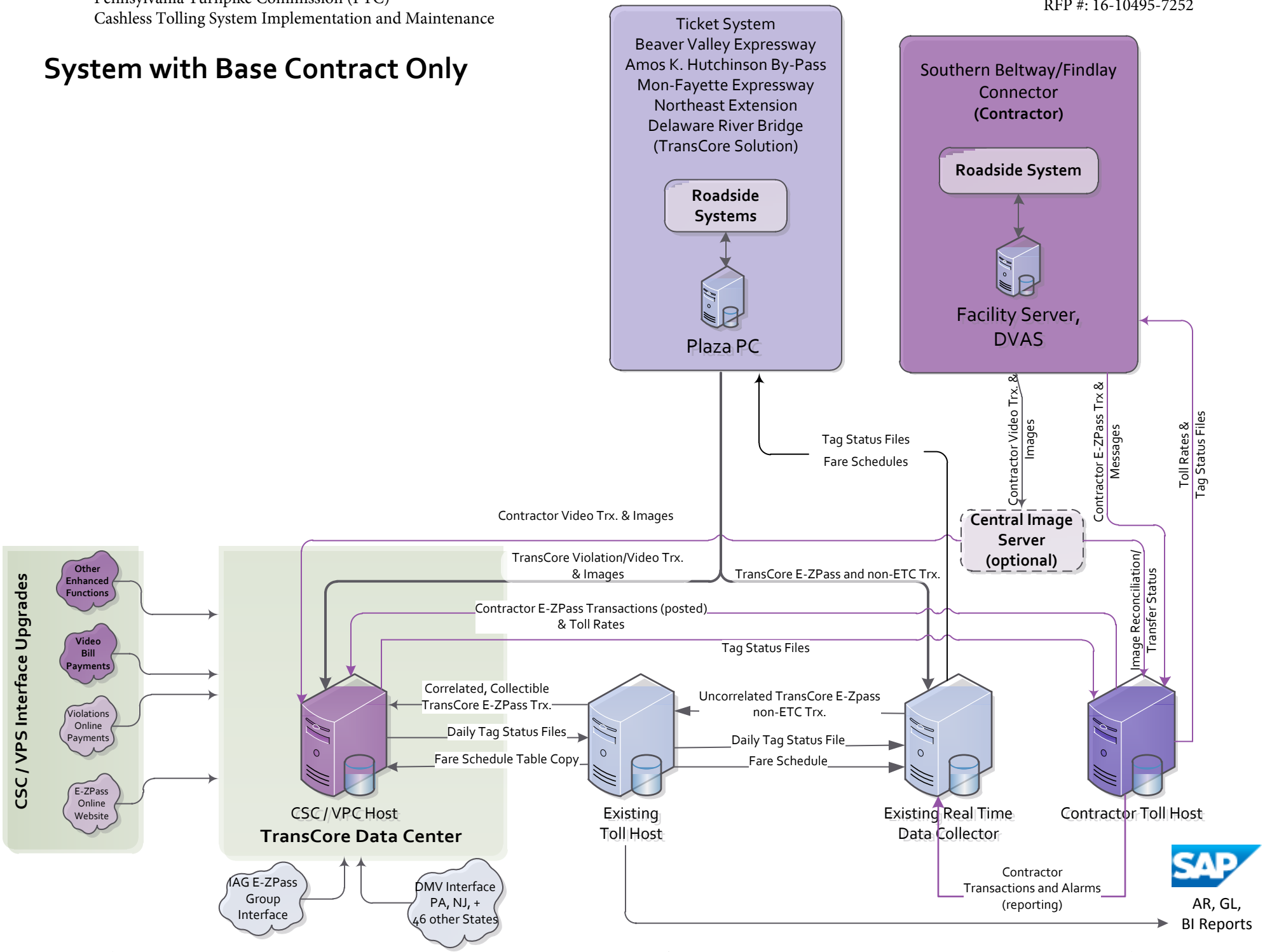
~ End of Report ~

Attachment 10
Cashless Tolling Concept Plan

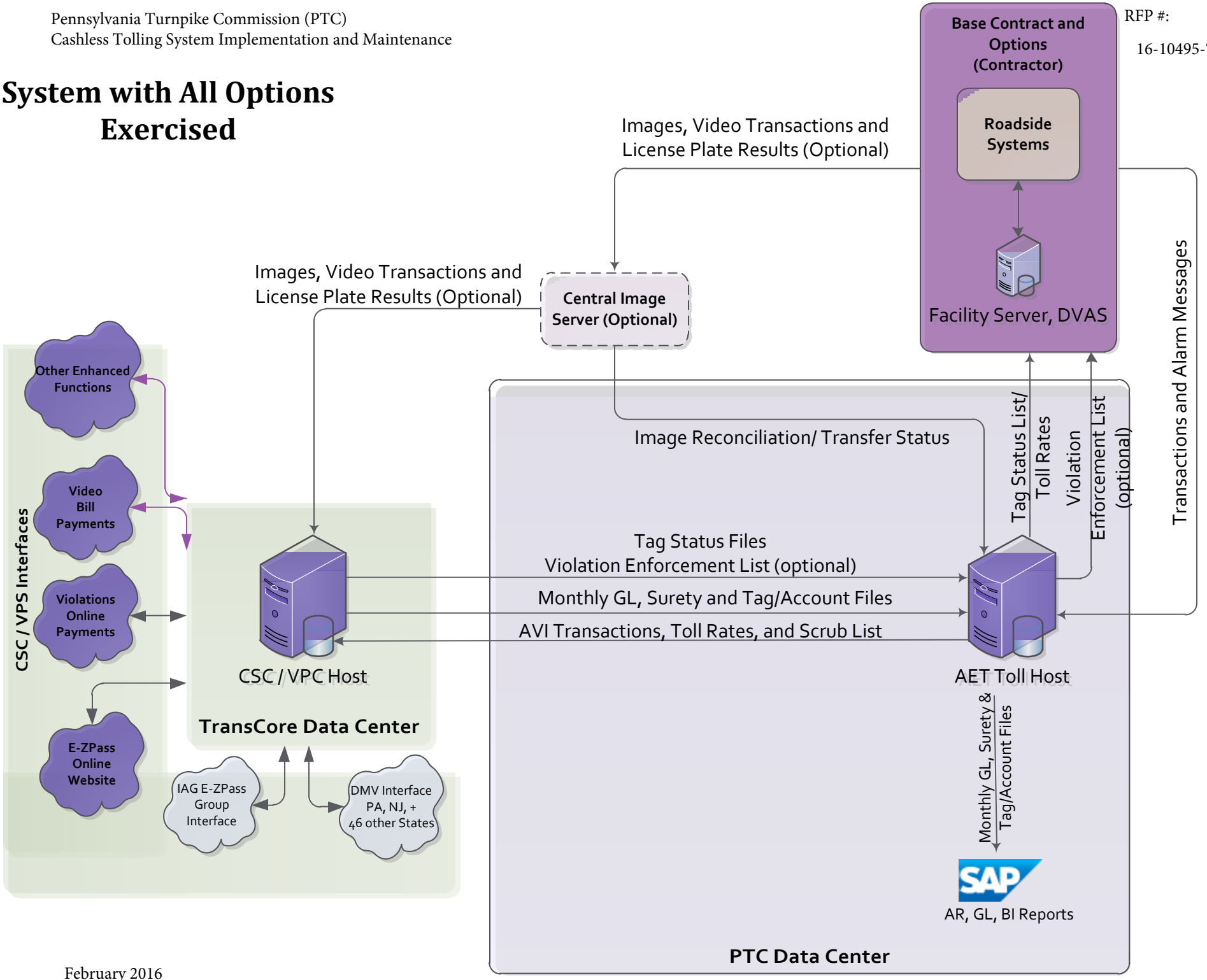
Current System



System with Base Contract Only



System with All Options Exercised



Attachment 11
Maintenance Responsibility Matrix

Maintenance Responsibilities Matrix

A =	Primary Responsibility - The identified party has the primary responsibility for completion of the item.[1]
B =	Support / Coordination -The identified party provides either support or coordination to assist the primary responsible party with successful completion of the item.[1]
C =	No Responsibility - The identified party has no action for the item.

1= Monitoring
2 = Preventive Maintenance
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5 = Upgrades and Enhancements

Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Cashless Toll Host System												**Includes the Toll Host Servers, MOMs, SFTP/FTP File Servers, Domain Servers, Terminal Servers and SAN.**
	Operating System Maintenance (PTC Data Center)	B	C	C	C	B	A	A	A	A	A	Work includes updating and patching the Host Systems Operating System including new and security releases and ensure the most up to date software is installed and properly configured.
	Operating System Maintenance (Off Site or Cloud)	A	A	A	A	A	B	C	C	C	B	
	Database Software Maintenance (PTC Data Center)	B	C	C	C	B	A	A	A	A	A	Work includes installing and updating the most recent releases for the Host Systems Database(s).
	Database Software Maintenance (Off Site or Cloud)	A	A	A	A	A	B	C	C	C	B	
	Data Administration and Management (PTC Data Center)	B	B	B	B	B	A	A	A	A	A	Work includes the ongoing administration and management of Host data including backup, archiving, deletion, & restoration of data. Also responsible for the administration of data storage for databases, file systems, and images.
	Data Administration and Management (Off Site or Cloud)	A	A	A	A	A	B	B	B	B	B	
	Cashless Toll Host Hardware Maintenance (PTC Data Center)	B	C	B	B	B	A	A	A	A	A	Work includes the replacement and upgrading of Host server hardware and components to ensure proper operating conditions of the primary and secondary Hosts.
	Cashless Toll Host Hardware Maintenance (Off Site or Cloud)	A	A	A	A	A	B	C	B	B	B	
	Cashless Toll Host Network - WAN	B	C	C	C	B	A	A	A	A	A	Work includes the maintenance of the Cashless Toll Host network and related devices such as switches and routers to ensure proper operating conditions. This will include any hardware, software, and configuration associated with such devices installed prior to the PTC firewall.
	Cashless Toll Host Network - LAN	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of the Cashless Toll Host network and related devices such as switches and routers to ensure proper operating conditions. This will include any hardware, software, and configuration associated with such devices installed after the PTC firewall.

Maintenance Responsibilities Matrix

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Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
	3rd Party Security Software Maintenance (PTC Data Center)	B	B	B	B	B	A	A	A	A	A	Work includes updating and patching 3rd party software on all Cashless Host System Servers, including new and security releases and ensure the most up to date versions of virus, firewall, spam protection and other security software is installed and properly configured.
	3rd Party Security Software Maintenance (Off Site of Cloud)	A	A	A	A	A	B	B	B	B	B	
	3rd Party Network Monitoring Software Maintenance	A	A	A	A	A	B	B	B	B	B	Work Includes updating and patching 3rd party software on all Cashless Toll Host System Servers, including new and security releases and ensure the most up to date network monitoring and management software is installed and properly configured.
	Cashless Toll Host Application Software Maintenance	A	A	A	A	A	B	B	C	C	B	Work includes the monitoring and maintenance of the Host toll system applications ensuring the most current version(s) are installed, configured, and operating properly according to change control policy.

Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Cashless Toll Host System												**Includes the Toll Host Servers, MOMs, SFTP/FTP File Servers, Domain Servers, Terminal Servers and SAN.**
	Database Maintenance/Administration/Tuning	A	A	A	A	A	B	C	C	C	B	Work includes the administration, maintenance, and tuning of the Host Systems Database(s) to ensure optimal performance. This includes the responsibility of creating new database partitions, table spaces, etc. as needed by the system.
	Inventory on Equipment in MOMS	A	A	n/a	n/a	n/a	B	B	n/a	n/a	n/a	PTC will maintain the inventory of hardware and Contractor will coordinate with PTC if inventory changes are needed.
	MOMs Alarm Entry and Maintenance	A	A	A	A	A	A	B	C	C	B	Work includes Alarm entry, configuration and maintenance.
	Creation of ad-hoc reports, queries and analysis of data	A	A	n/a	n/a	n/a	A	A	n/a	n/a	n/a	Work includes the creation and generation of ad-hoc reports and queries and perfroming data analysis as requested by PTC. The PTC and Contractor will have shared responsibility for ad-hoc reporting.
	Software Updates	A	A	A	A	A	B	B	B	B	B	Work includes performing software updates to support upgrades to hardware or third-party software; changes to Business Rules; changes to E-ZPass Group ICD; addition of new E-ZPass Group and Interoprable Agencies; compliance to security requirements and legislative and statutory changes.

Maintenance Responsibilities Matrix

A =	Primary Responsibility - The identified party has the primary responsibility for completion of the item.[1]
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Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Facility Server(s) (if required)												
	Operating System Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes updating and patching the Facility Server Operating System including new and security releases and ensure the most up to date virus, firewall, spam protection and other security software is installed and properly configured.
	Database Software Maintenance.	A	A	A	A	A	B	C	C	C	B	Work includes installing and updating the most recent releases for the Facility Server Systems Database(s).
	Data Administration and Management	A	A	A	A	A	C	C	C	C	C	Work includes the ongoing administration and management of Facility Server data including backup, archiving, deletion, & restoration of data. Also responsible for the administration of data storage for databases, file systems, and images.
	Facility Server Hardware Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes the replacement and upgrading of Facility Server hardware components to ensure proper operating conditions.
	Facility Server Network	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of Facility Server network and related devices such as switches and routers to ensure proper operating conditions.
	3rd Party Security and Network Monitoring Software Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes updating and patching 3rd party software on the Cashless Tolling Facility Server(s), including new and security releases and ensure the most up to date version is installed and properly configured. This includes 3rd party security and network management software.
	Facility Server Toll Application Software Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes the monitoring and maintenance of the Facility Server applications ensuring the most current version(s) are installed, configured, and operating properly according to change control policy.

Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
	Database Maintenance/Administration/Tuning	A	A	A	A	A	B	C	C	C	B	Work includes updating and installing the most recent releases for the Facility Server Database. Responsibility will include the administration, maintaining and tuning of the Facility Server Database to ensure optimal performance. This includes the responsibility of creating new database partitions, table spaces, etc. as needed by the system.
	Software Updates	A	A	A	A	A	B	B	B	B	B	Work includes software updates to support upgrades to hardware or third-party software; changes to Business Rules; changes to E-ZPass Group ICD; addition of new E-ZPass Group and Interoprable Agencies; compliance to security requirements and legislative and statutory changes.

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Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Image Server(s) (if required)												
	Operating System Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes updating and patching the Image Server Operating System including new and security releases and ensure the most up to date virus, firewall, spam protection and other security software is installed and properly configured.
	Database Software Maintenance.	A	A	A	A	A	B	C	C	C	B	Work includes installing and updating the most recent releases for the Image Server Database(s).
	Data Administration and Management	A	A	A	A	A	C	C	C	C	C	Work includes the ongoing administration and management of Image Server data including backup, archiving, deletion, & restoration of data. Also responsible for the administration of data storage for databases, file systems, and images.
	Image Server Hardware Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes the replacement and upgrading of Image server hardware components to ensure proper operating conditions.
	Image Server Network	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of Image Server network and related devices such as switches and routers to ensure proper operating conditions.
	3rd Party Security and Network Monitoring Software Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes updating and patching 3rd party software on the Image Servers, including new and security releases and ensure the most up to date version is installed and properly configured. This includes 3rd party security and network management software.
	Image Server Toll Application Software Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes the monitoring and maintenance of the Image Server applications ensuring the most current version(s) are installed, configured, and operating properly according to change control policy.
	Database Maintenance/Administration/Tuning	A	A	A	A	A	B	C	C	C	B	Work includes updating and installing the most recent releases for the Image Server Database. Responsibility will include the administration, maintaining and tuning of the Image Server Database to ensure optimal performance. This includes the responsibility of creating new database partitions, table spaces, etc. as needed by the system.
	Software Updates	A	A	A	A	A	B	B	B	B	B	Work includes performing software updates to support upgrades to hardware or third-party software; changes to Business Rules; changes to E-ZPass Group ICD; addition of new E-ZPass Group and Interoprable Agencies; compliance to security requirements and legislative and statutory changes.

Maintenance Responsibilities Matrix

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Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Zone Controller(s) & In-lane Equipment												
	Operating System Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes updating and patching the Zone Controller Operating System including new and security releases and ensure the most up to date virus, firewall, spam protection and other security software is installed and properly configured.
	Data Administration and Management	A	A	A	A	A	C	C	C	C	C	Work includes the ongoing management of Zone Controller data including backup, archiving, deletion, & restoration of data.
	Zone Controller & in-lane equipment Hardware Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes the replacement and upgrading of Zone Controller hardware components to ensure proper operating conditions. Includes servers, storage units, lane electronics, power supplies and misc. components.
	Zone Controller Network	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of Image Server network and related devices such as switches and routers to ensure proper operating conditions.
	Zone Controller Toll Application Software Maintenance	A	A	A	A	A	B	C	C	C	B	Work includes the monitoring and maintenance of the Zone Controller toll applications ensuring the most current version(s) are installed, configured, and operating properly according to change control policy.
	Software Updates	A	A	A	A	A	B	B	B	B	B	Work includes performing software updates to support upgrades to hardware or third-party software; changes to Business Rules; changes to E-ZPass Group ICD; addition of new E-ZPass Group and Interoprable Agencies; compliance to security requirements and legislative and statutory changes.
	Firmware Updates to Lane Equipment	A	A	A	A	A	B	B	B	B	B	Work includes updating the lane equipment with the latest software/firmware releases from lane equipment vendor(s).
	AVI Equipment	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of all AVI related equipment and components including readers, reader cabinets, antennas, RF modules, and associated communication and power components to ensure proper configuration and normal operating condition.
	AVDC (Automatic Vehicle Detection & Classification) Equipment	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of all AVDC equipment and components including loops, light curtains, treadles, and scanners as well as all associated controllers housing units and communication and power components to ensure proper configuration normal operating condition.

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Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
	LPICPS (License Plate Image Capture & Processing System) Equipment	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of all image capture equipment and components including cameras, lenses, lighting, housing units, light sensors, controller and all associated communication and power components to ensure proper configuration, optimal alignment and illumination, and normal operating condition.
	DVAS Equipment	A	A	A	A	A	B	C	C	C	B	Work includes the maintenance of all the DVAS equipment including cameras, DVAS servers, image/video storage, housing units and all associated communication and power components to ensure proper configuration and normal operating condition.
	Wiring & Connections	A	A	A	A	A	B	C	C	C	C	Work includes the inspection, testing, and troubleshooting cables, wiring, junction boxes and terminations to detect problems and degradation and will be responsible to replace any item not in compliance with the Scope of Work, performance specifications and/or Local building code.
	Mounting Equipment & Brackets	A	A	A	A	A	C	C	C	C	C	Work includes the inspection and maintainence of all equipment mounting hardware and brackets provided as a part of the Scope of Work.
	Conduits & Cable Trays	A	A	A	A	A	C	C	C	C	C	Work includes the inspection of conduits and cable trays to detect problems and degradation and will be responsible to replace or repair any item not in compliance with the Scope of Work, performance specifications and/or Local building code.

Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Zone Controller(s) & In-lane Equipment												
	Maintenance & Protection of Traffic	A	A	A	A	A	B	B	B	B	B	Work includes the maintenance and protection of traffic. The Contractor will coordinate with PTC to schedule any lane closures required to perform maintenance in the lanes.
	Lane Spare Parts and Inventory	A	A	A	A	A	B	B	B	B	B	Work includes maintaining an adequate level of replacement and spare parts as necessary for term of the contract. The Contractor will coordinate with PTC to ensure all inventory items are accurately entered into the MOM's system and that adequate replacement levels are maintained.
Communications and Network Equipment												
	Communication System Equipment (WAN)	B	C	C	C	B	A	A	A	A	A	Work includes the inspection and to make repairs, adjustments, and replacements of WAN components as necessary to maintain the equipment up to the defined demarcation point in normal operating condition.
	Communication System Equipment (LAN)	A	A	A	A	A	B	C	C	C	B	Work includes the inspection and to make repairs, adjustments, and replacements of LAN components as necessary to maintain the equipment from the defined demarcation point in normal operating condition.

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Element / Task / Component Description		Toll System "Contractor"					PTC					Comments and Other Responsibilities / Information
		1	2	3	4	5	1	2	3	4	5	
Toll Equipment Building												
	Toll System Equipment Racks/Cabinets	A	A	A	A	A	B	C	C	C	C	Work includes inspecting and maintaining the Contractor supplied Toll System equipment racks to ensure full operation, orderly condition, and are free of dust and debris.
	Toll Equipment Building Access & Security	C	C	C	C	C	A	A	A	A	A	Work includes the inspection of all equipment, both major components and support components (cameras, access card readers, locks) that constitute the security system and make repairs, cleaning, adjustments, and replacements of components as necessary to maintain the equipment in normal operating condition. This will also include any card control servers and software.
	Toll Equipment Building Janitorial Services	B	B	C	C	C	A	A	A	A	A	Work includes the inspection and maintainence of the toll equipment building to ensure full operational and orderly conditions and are free of dust and debris.
	Plaza Facility Gantry Structures	C	C	C	C	B	A	A	A	A	A	Work includes periodically inspecting all gantries and supporting structures to ensure structural integrity. PTC will be responsible for the gantries up to a specified demarcation point. The Contractor will be responsible for their equipment and mounting structures betond the defined demarcation point.
	Plaza TEB Facility Components	B	B	C	C	B	A	A	A	A	A	Work includes the inspection of all equipment, both major components and support components (fans, cabinets, UPS, generator, environmental control units, filters, and other equipment not provided by the Contractor) that constitute the Cashless Toll System and shall make such repairs, cleaning, adjustments, and replacements of components as necessary to maintain the equipment in normal operating condition.

[1] Note: This document does not supercede the need for notifications, scheduling and approvals that are required by the PTC. The Contractor shall inform and coordinate with PTC of any work to be done that impacts operations.

Attachment 12
Database Standards for the Pennsylvania Turnpike Commission

Database Standards for the Pennsylvania Turnpike Commission

Created by the Server and Storage Management Group on February 24, 2014

Table of Contents

Database Standards for the Pennsylvania Turnpike Commission

The purpose of this document is to outline specific standards for creation, use and management of databases used by various applications at the PTC. Topics covered will include:

1) Supported Database Platforms
2) Configuration Standards for a Database Server
3) Database Permissions and use of Service Accounts
4) Backup and Recovery

Supported Database Platforms

At the time of this writing, the ONLY supported database platform for applications is Microsoft SQL Server. The current landscape includes SQL Server 2005, 2008, 2008 R2 and 2012 versions.

When installing a new application or upgrading an existing one, the target should be the most recent database version that is available and is supported by the application vendor. The exception to this would be if an application supports a database in a newer version (such as SQL 2012) but the database will need to be accessed from a second application that does not support that version. In this case, the database should be established on the highest version that is supported by all applications that will need to use it. In addition, since SQL 2005 is nearing end of life in Microsoft's Product Lifecycle, it is highly desirable to create a new database in a newer version. The ultimate goal for any new database is to create it on a SQL Server 2012 Database Instance. If the application does not support SQL 2012 at this time, the next preference would be to use SQL 2008 R2.

Configuration Standards for a Database Server

Following SQL Server best practices, a SQL Server Instance should be configured as follows:

- Use of Built-In Administrator Group
- Drive configuration
- Memory Configuration

Use of Built-In Administrator Group

With SQL Server 2005 and prior versions, the Built-In Administrators group on the SQL Server was granted SysAdmin rights. This practice changes with SQL Server 2008 and higher versions. Under NO circumstances should the Built-In Administrators group be added to a SQL Server 2008 or higher version instance.

Drive Configuration

For a new SQL Server, four drives (not including the C Drive or a drive designated as a Page File location) will be needed to get started.

When creating a new Instance on a SQL Server, all executables should be placed onto the server's F Drive.

System databases (Master, Model, MSDB and TempDB) should be created on a second drive that is reserved for system databases only. In a SQL Instance where TempDB usage is exceptionally high, TempDB can be moved to its own drive for performance purposes.

When creating Databases within a SQL Server instance, the Database name should be descriptive of the purpose or use of the database. This can be done by referencing the primary Application that will be using the new Database. For example, a Database being created for an Application named Spotlight on SQL Server should use the word Spotlight in its name.

Data Files for all SQL Databases created within an Instance should be placed onto a drive reserved for this purpose. The Log Files for the same SQL Databases should be placed on a drive that is different from the Data Files.

As an Example, the following drive configuration might be used for a new SQL Server installation with a Default Instance.

Drive Letter	Purpose
C:	Reserved for Windows System Installation as well as SQL Server files that are required to reside within one or more of the Windows directories.
F:	Reserved for SQL Server Executables. All SQL Instances on a Server will use the F Drive for this purpose.
G:	Used for the Default Instance's System Databases
H:	Used for the Default Instance's Data Files
I:	Used for the Default Instance's Log Files
X:	Used for Windows Paging File

A second database instance created on the same SQL Server would only need three additional drives. Since the executables are installed on the F Drive for all SQL Instances, drives will only be needed for the System Databases, Data Files and Log Files. As an example, a Named Instance added to a SQL Server using the above configuration for the default instance could use the following additional drives:

J:	Used for the Named Instance's System Databases
K:	Used for the Named Instance's Data Files
L:	Used for the Named Instance's Log Files

Memory Configuration

By default, SQL Server is configured to utilize almost all available memory on a server and not let it go. Allowing this default configuration causes periodic performance issues when certain events occur.

An example of when this might cause a problem is when backup processing is launched. A part of the backup job runs outside of SQL Server as a Windows process. If SQL Server has used up almost all of the available memory, the backup job running as a Windows process will need to acquire memory before it can run. Windows does this by requesting that SQL Server release memory for another purpose. SQL Server will release ALL pages in memory, tell Windows that it is OK to allocate memory to the backup job and then starts to reload pages into SQL memory using what memory remains.

A better solution to this is to set limits on how much memory SQL Server uses. There is not a perfect formula for doing this so the initial settings may need to be adjusted after reviewing server performance. As a starting point, subtract 2 Gig from the amount of available system memory. Then divide the remaining memory between all SQL Server instances that will be running on that server. If you have an instance that you know will not require a lot of memory for execution, you can lower the max memory setting for that instance and allocate the extra memory to another instance(s).

Database Permissions and use of Service Accounts

When creating a new SQL database, there are a few factors that need to be considered:

- User Accounts
  - Service Accounts
  - End user accounts
  - SysAdmin accounts
- Considerations for creation of SQL Logins

User Accounts

The general rules for accessing databases are as follows:

1) Whenever possible, use the application that the database belongs to for accessing the contents of a database. This is especially true when you need to make updates to the data.
2) If the application cannot provide the access needed to the contents of the database, then the user should use their OWN Windows login to gain access to the data.

   NO USER SHOULD USE A SERVICE ACCOUNT TO LOG INTERACTIVELY INTO A DATABASE.

   As a rule, a user's Windows login will only be granted Read permissions to a database. If the user needs to make manual updates to the database, contact a PTC Database Administrator (DBA) for assistance.
3) Use Service Accounts only with Applications.

   NO USER SHOULD USE A SERVICE ACCOUNT TO LOG DIRECTLY INTO A DATABASE.

Types of SQL Server Logins

The following sections define three types of common SQL Server Logins and provide an explanation of when use of each type is acceptable.

Service Accounts

A SQL Server Service Account is a SQL Login which is used with an application to provide connections to one or more databases required by the application to perform its designed functions. If the application will need to access Network Resources during execution of any processes, a Windows Domain Account should be added as a SQL Login for this purpose. If the application does not need to access Network Resources, a SQL Server Login should be created for the application.

When creating a Service Account for use with one or more Applications, use a name that can be clearly associated with the application(s) that it will be used in. This will assist the DBA and Auditors during future maintenance and reviews.

A SQL Service Account is for use with an Application ONLY. If a user needs to access a database using tools such as the SQL Server Management Console (SSMC) or Crystal Reports, he or she should connect

to the SQL Server using his or her own Windows Credentials for authentication. Under no circumstances should the user log into the database using an application's Service Account. This is an Auditing Requirement and if a user is found to be using a Service account for access outside of the application, corrective measures will be taken as appropriate.

End user accounts

A user who needs to directly (outside of the scope of the application itself) access the database through the use of a tool such as SQL Service Management Studio (SSMS) or a reporting tool such as Crystal Reports, will be added to one or more SQL Server Instances using his or her Windows Login. If database access is required to perform updates to the database, a SQL Server DBA should be involved in the process unless prior arrangements have been made. At the DBA's discretion, the user requesting access may be temporarily granted elevated permissions for the time window when maintenance is being performed. It is PTC Policy that any changes made to a database outside of the application that owns the database (i.e. manual updates to table(s) using the SQL Server Management Console or SSMC) must be documented and approved by a member of the PTC's Internal Audit Department.

Accounts with SysAdmin rights

Under normal circumstances, logins with Sysadmin rights are restricted to PTC DBAs since their use can be dangerous in the hands of a resource who does not fully understand database management procedures. Exceptions to this rule will be considered on a case by case basis. A temporary exception may be granted during the application installation process if the process requires this right during the database setup step of the installation process. If a more permanent exception is requested and granted, the application's database(s) should be created in a SQL Instance that is reserved for that application. This will protect other application's databases from inadvertent modification through the use of this privileged account.

Since a SQL Login with SysAdmin rights can make updates directly to database tables and other objects, it is important to keep PTC Policy in mind. It is PTC Policy that any changes made to a database outside of the application that owns the database (i.e. manual updates to table(s) using the SQL Server Management Console or SSMC) must be documented with a Change Request or Help Desk ticket and approved by a member of the PTC's Internal Audit Department.

Backup and Recovery

When a new Database Server is created, or a New SQL Instance is created on an existing SQL Server or new databases are added to an existing SQL Server Instance, the Data Storage Group should be informed. Likewise, when any database is moved to a different SQL Server or Instance or is deleted from a SQL Server, the Data Storage Group needs to know about this as well.

Attachment 13
ETC System Change Control Procedures

ELECTRONIC TOLL COLLECTION SYSTEM – CHANGE CONTROL PROCEDURES

Version 1.6
October 21, 2015

Table of Contents

OVERVIEW

The purpose of this document is to provide the critical steps performed by ETC staff in working with our Toll Systems integrator(s) to ensure the proper procedures are followed for any changes made to the Commission Toll Collection System, either hardware or software. The Toll Collection System includes the following subsystems:

1. Lane/Plaza
2. ITMS/Toll Host

There are 3 possible cases that follow different procedures for hardware or software changes:

1. Change Requests (ECOs):
   a. Change triggered by PTC initiated requirement;
   b. Internal operations request that change system's design;
   c. Internal operations requests based on business needs;
2. Normal System Maintenance *
3. Urgent / Emergency Changes ("Hot Fixes") *

* Because of the system's dynamic nature and complexity, there are times when the ECO process will not be followed. Currently we have identified the following two (2) types:

- Normal System Maintenance is performed on a set schedule and upon request. This maintenance activity includes archiving data, rebuilding indices and refreshing the data in the QA environment.

- Urgent/Emergency Changes ("Hot Fixes") are requested by ETC or System Integrator and require software changes to be done ASAP to prevent greater impact on system, customers, commission's revenue flow, etc. All "Hot Fixes" should be documented through Release Notes.

Following are detailed descriptions of the procedures that will be followed for each case.

Change Requests (ECO):

What is an ECO?

An *Engineering Change Order (ECO)* describes an authorized and documented change to the

PTC Toll system specifications that were approved in the project's Detailed Design Document.

According to established policy, all changes to a system must be (1) *documented* by an Engineering Change Order, (2) *evaluated*, and then (3) *authorized* by both System Integrator and the PTC before work can commence and the change made. The ECO process was put in place for the purposes of having a tracking history for all Toll System changes, not following the ECO process could result in unauthorized or unnecessary/undocumented changes.

The current preferred method of ECO submission is to complete them in Word and submit them via e-mail (electronically) as attached files.

Where Are ECOs Kept?

ECOs are kept electronically and in hard copy by both System Integrator and the PTC.

Hard copy:

The final original signed copies (hard copy) of all engineering change orders are filed in a binder at System Integrator. The PTC also prints a hard copy of all completed ECOs and keeps them in a numerical binder in the ETC department.

Electronic copy:

The PTC Project Manager creates PDF copies of all ECOs (Forms 1, 2 and 3) and stores them on the PTC Network (under the ETC Department share). In addition an excel spreadsheet is maintained by the PTC Project Manager of all open and closed ECOs. The spreadsheet is updated regularly (usually bi-weekly) and reviewed once a month by PTC staff (ETC, Fare Collection, Compliance) and System Integrator Design Team Leaders to update the status of all open ECOs.

System Integrator maintains an internal database of all open/closed ECOs and electronic copies on their internal network.

How Are ECOs Named?

Each ECO is assigned a number by the *Control Person*, sequenced by order of submission. (For example, the fifth ECO submitted received the number 0005.)

All ECOs received for the current PTC project are assigned numbers within the same sequence, regardless of department. If a form is modified after it has been filed, the original file is archived as version 1 and the updated form is recorded as version 2. All modifications that are originally submitted will be archived with a new version number. If a form that has been signed is being updated, the updated version of the form will also need to be signed. All iterations of the forms will be archived.

Online, the filenames for a particular ECO are of the format:

ECO *0000-#* .DOCX

where	*0000*	The assigned ECO number
	#	The form number (1, 2, or 3)

Examples:

Description of ECO	*Corresponding Filename*
ECO 0003, Form 2	ECO 0003-2.DOCX
ECO 0022, Form 3	ECO 0022-3.DOCX
ECO 0022, Form 3,updated	ECO 0022-3_v2.DOCX

What Forms Comprise an ECO?

Each ECO is comprised of three forms, representing the three stages of the ECO process:

- **Form 1: Declaration of the change(s) to be made:** - This is the "Here is what we want to change" form.
- **Form 2: Evaluation & Authorization to Proceed:** - This is the "Here is what the change will entail" form. The proposed change is evaluated by System Integrator; a general solution is offered by System Integrator and reviewed by the PTC. The PTC has the option to authorize the change(s) or reject the change(s). Justification for the change must be offered at this stage, along with cost/time analysis.
- **Form 3: Commencement and approval of actual work:** - This is the "Here is what we changed" form. After testing (see ECO Testing Process section), is the finished product acceptable? This form is submitted after the changes are implemented into production

The ECO Process and Resources

All ECOs should be generated by the PTC Project Manager (or other members of the ETC group) or by System Integrator using the sample forms included at the end of this document. It is preferred that all ECO forms are completed electronically;

Process:

The four figures included on pages 18-21 show the flow of each form described below:

Initiating Change Request: ECO Form 1

Form 1 should be completed by the PTC Project Manager or by System Integrator that describes the change order. Once completed the form should be emailed to the Control Person. The Control Person is responsible for the ECO number assignment and will then return the ECO via email to the PTC Project Manager. The PTC Project Manager should store a PDF version of form 1 on the ETC Department share. (\\cofs2\department\Communications_&_Public_Relations\ETC\ECOs) (Note: There is a folder for each numerical series (i.e.; 500 series) that the forms should be kept in)

Change Order Evaluation and Approval: ECO Form 2

The System Integrator Design Team Leader performs a technical evaluation of the change requested and creates a technical design and plan of action for either the hardware or software changes. At this point ECO form 2 is generated explaining the recommended change, including the evaluation details, proposed action, change order category (Major/Minor – See pg 17 Letter E), time estimate and cost (if applicable). Evaluations which will exceed one page should be continued in a separate document. Alternatively, the evaluation may be summarized in the form and a complete evaluation provided in a separate document. These supplemental documents will be distributed and stored with the main form. Form 2 and any supporting documentation are sent by the Control Person via email to the PTC Project Manager.

After review by the PTC Project Manager and other PTC staff as required, form 2 is signed by the PTC Project Manager and returned to the Control Person via email. If the change has been rejected this is the end of the forms process. If the change indicated is considered a Major Change, the ETC Manager or ETC Director (if involved) will also be required to sign form 2 of the ECO.

The PTC Project Manager should store a PDF version of forms 1 and 2 on the ETC Department share, (Note: There is a folder for each numerical series (i.e.; 500 series) that the forms should be kept in).

Change Order Software Development and Testing

If form 2 has been approved for development, the System Integrator Implementer develops any new modules and/or makes software modifications, or replaces hardware according to its technical design and plan of action. Once the changes are completed the process moves to testing. The following testing procedure will be utilized to test ECO changes, whether for hardware or software:

PTC Q/A Testing*:*

The PTC expects that any changes made to the Toll System will be tested thoroughly by the System Integrator before sending an email to the PTC Project Manager to establish that the changes are now ready for PTC testing. The PTC Project Manager will respond to the email approving the move to the testing phase. The following testing procedure will be followed:

Test Strategizing: The PTC Project Manager, System Integrator Design Team Leader and Implementer will meet to discuss the change(s) being made as detailed in form 2 and develop a test script that will be used for QA testing.

Test Script Creation: Based upon the test strategy, the PTC Project Manager will create a test script that will be used to test the changes being made. A history of all test scripts is kept by the ETC department which can be used as the basis for creating test scripts. Possible types of tests that could be included in the test script are:

1. Positive Tests – tests that confirm the changes made as part of the ECO.
2. Negative Tests – tests that could break the system or the changes made as part of the ECO.
3. Regression Tests – tests which ensure there are no negative system wide

impacts based upon the changes made for the ECO.

4. Expected Outcomes – each test case should include, where applicable, all expected outcomes, i.e.: screen shots of data related changes

If ITMS/Host changes are being made and the software is being put into the QA environment, The System Integrator will send an email to the PTC Project Manager notifying the PTC that the changes are ready to move to QA. The PTC Project Manager will send an approval email back to the System Integrator and update the QA Change History Log to identify the objects that are being moved into the QA environment and which ECOs they are related to. If made available to the PTC, the System Integrator's Unit Test document will also be included.

Test Plan Execution: The PTC Project Manager will perform the following steps:

1. Schedule the use of test facility – if being done in live lanes, will need to work with Fare Collection, Maintenance, and/or Engineering to work on a schedule for any lane closures.
2. Secure and schedule necessary personnel – Work with departments affected by the ECO change to secure test resources. In most cases this includes the Fare Collection and Compliance departments.
3. Secure necessary equipment – includes vehicles, scripts, test logs, laptops, E-Zpass tags,etc….
4. Direct the testing

Some possible outputs from test execution include but are not limited to:

1. Completed Test lane logs – a record of all occurrences in the lane as each test is run.
2. Transaction Data – a file containing the transactions for all tests should be Saved and loaded into the QA Host database for review.
3. In some cases a before and after picture of screen changes, for example changes for ITMS are often shown in this way.
4. Defect Report – A list of all defects found during testing
5. A finalized script – Any corrections/changes to scripts should be made with a Final electronic copy saved and stored with the ETC ECO Documentation.

Defect Management: A defect is a flaw found in a system, or in a component of the system that causes the component or system to fail to perform its required function. The PTC Project Manager may complete a defect report, if there are defects found during the test plan execution. The Defect Report could include the following information:

1. Defect description – a one or two sentence description of the Defect found.
2. Module/Code Impact – an explanation of where/what the Defect has impacted.
3. Severity/Frequency – working with the System Integrator implementer and other PTC staff determine the severity and frequency of the Defect.
4. Priority/Retest Plan – determine how the defect will be fixed and retested.
5. Steps to reproduce – write the steps that created the defect so that they can be Properly re-tested if required.
6. Evaluation/Resolution – Explanation of defect found and recommended Resolution. A signature by the System Integrator and PTC Project Manager should be provided and the document stored by the PTC.

Defect Re-testing: if re-testing is required an additional report could be created and included in the Test results reporting:

1. Defect description
2. Steps followed to re-test
3. Verified by – person(s) involved in re-test
4. Status – success or failure of re-test
5. Resolution

Test Results Reporting: Test results to determine the quality of the changes made will vary depending on the types of changes to be made. For example changes to lane processes may require simple screen shots or the printing of receipts, whereas data changes may require the printing and analysis of Host reports. The expectations for Test Results reporting will be determined in the Test Strategizing part of this process.

The level of analysis of the transaction data and reports will be done to a level that makes the PTC Project Manager comfortable with the results of the changes. For example some changes may require a 100% analysis of the results whereas other changes may require only much smaller analysis or sample size to approve the effectiveness of the changes.

Change Order Deployment Approval: Form 3

Once the changes have been completed, tested by System Integrator and PTC staff, Form 3 is completed by the System Integrator Team Leader. The Control Person should email Form 3 to the PTC Project Manager and obtain a signature on line 1 and where applicable establish a post deployment acceptance period. The post deployment period represents a period of time that the new implementation will be evaluated to ensure no issues arise as a result of the change. The signature on line 1 authorizes the implementation of the change on a date that fits properly into the Commission and System Integrator's calendars. It is standard practice to avoid, Mondays, Fridays and any holiday for performing system releases. The PTC Project Manager should email the signed copy of form 3 back to the Control person. The System Integrator Team Leader should prepare release notes for the changes being implemented. The Release notes should contain any pertinent information necessary to explain the changes being made. In particular, any ECOs that are being moved into production as part of the change should be detailed in the Release Notes document. The System Integrator Team Leader should email the Release Notes Document to the PTC Project Manager.

The PTC Project Manager should send an email to a specified corporate email group (Department Heads and others that could be affected by the changes) several days prior to the production release informing the group of the changes being implemented, providing the group enough time to consider the changes and provide feedback if necessary. In addition, the PTC Project Manager should also include information regarding the production release on the IT Change Management weekly report.

Note: If the new release involves a new executable of ITMS there will be specific requirements for pushing the changes out to the ITMS users group.

After implementation is complete, if applicable the clock begins on the Post Deployment period.

Once the Post Deployment period has passed (if applicable) without issue, and all system documentation is complete, the PTC project Manager should secure a signature on line 4 of form 3, scan a copy of the document and email it back to the Control Person. The PDF version of forms 1, 2 and 3 should be put on the ETC Department share (Note: There is a folder for each numerical series (i.e.; 500 series) that the forms should be kept in.)

Normal System Maintenance:

As noted previously, normal system maintenance processes do not follow the ECO process. Examples of normal system maintenance include the following types of processes:

- **Archive data**
- **Rebuild Database indices and shrink logs**
- **Refresh the QA Database from Production**
- **Operating System(Server) Patches**
- **Reboot Servers**

Urgent/Emergency Changes ("Hot Fixes"):

Urgent/Emergency changes, "Hot Fixes" are those items that are found in production that require an immediate fix to prevent loss of revenue or incorrect processing which may impact customers in a negative way. Because of the high profile nature of "Hot Fixes", they are required to have multiple levels of approval before the fix can be put into production. Approval can be done by phone, but an email should always be delivered as well. The email should be generated by the System Integrator to the PTC Project Manager/ETC Manager/ETC Director describing the issue, the recommended resolution and requesting approval to move the changes into production as soon as possible. The PTC Project Manager/ETC Manager/ETC Director will respond to the email with approval/denial. If ETC Management and System Integrator agree, all the documentation can be provided after the "Hot Fix" has been implemented.

Due to the nature of these types of situations, time may play a critical part in having the solution deployed in production. Therefore quite often testing "Hot Fixes" is not possible. In the rare case where the issue can be tested, the PTC Compliance Department should be notified of the situation and at their discretion may participate in testing and reviewing results.

In the rare case where the issue can't be reproduced in the QA system or test environment, the following items may be provided:

- A detailed document which fully explains the issue, including the level of severity or impact.
- Explain why the issue cannot be reproduced in the QA system.
- The proposed solution, including any potential risks.
- Any other relevant documents that will support having to make the "Hot Fix"

If testing is possible before deployment, once the "Hot Fix" has been successfully tested and verified in the QA or test environment (or the necessary documents are provided) the System Integrator Team Leader, PTC Project Manager and the ETC Director or ETC Manager must all agree to move/make the "Hot Fix" changes in Production via email.

ECO Form 3-H should be completed for each "Hot Fix" (even if it is done after installation), that should have all sections completed.

Where possible Release Notes should be generated (even if it's after installation), that explain the issue, its impacts and an explanation of the fix (resolution) put into production.

Parameter changes:

Parameter changes are those items that are found in production that require an immediate fix but may not be an actual software change that affects the entire system or may not require a full

release of the lane or plaza software. Parameter changes function the same as "Hot Fixes", in that they are required to have multiple levels of approval before the fix can be put into production. Approval can be done by phone, but an email should always be delivered as well. The email should be generated by the System Integrator to the PTC Project Manager/ETC Manager/ETC Director describing the issue, the recommended resolution and requesting approval to move the changes into production as soon as possible. The PTC Project Manager/ETC Manager/ETC Director will respond to the email with approval/denial. If ETC Management and System Integrator agree, all the documentation can be provided after the Parameter change has been implemented.

Due to the nature of these types of situations, time may play a critical part in having the solution deployed in production. Therefore quite often testing of Parameter changes is not possible. In the rare case where the issue can be tested, the PTC Compliance Department should be notified of the situation and at their discretion may participate in testing and reviewing results.

In the rare case where the issue can't be reproduced in the QA system or test environment, the following items may be provided:

- A detailed document which fully explains the issue, including the level of severity or impact.
- Explain why the issue cannot be reproduced in the QA system.
- The proposed solution, including any potential risks.
- Any other relevant documents that will support having to make the "Parameter change"

If testing is possible before deployment, once the Parameter change has been successfully tested and verified in the QA or test environment (or the necessary documents are provided) the System Integrator Team Leader, PTC Project Manager and the ETC Director or ETC Manager must all agree to move/make the Parameter Change changes in Production via email.

ECO Form 3-P should be completed for each Parameter change (even if it is done after installation), that should have all sections completed. Where possible Release Notes should be generated (even if it's after installation), that explain the issue, its impacts and an explanation of the fix (resolution) put into production.

Resources:

Below are the various people involved in the change control process and their responsibilities

- **Requestor:** The person(s) that request a change to made to the system which requires the generation of ECO form 1.
- **Control Person:** The System Integrator representative who is responsible for processing, distributing, filing, and inputting all ECO forms/data. *All ECOs (all forms and supplemental documentation) pass through and are routed by the Control Person.*
- **Evaluator:** A person assigned by the PTC Project Manager and/or System Integrator Design Team Leader to evaluate the proposed change, to determine its feasibility. *Fills out Form 2 after evaluation.*
- **Implementer:** A person (System Integrator employee) assigned by System Integrator to make the proposed changes for ECOs or Hot Fixes. *Fills out Form 3 when initial work is completed.*
- **PTC Project Manager:** The PTC representative who is responsible for the project and in a position to request changes and approve changes after implemented. *Reviews all Form 1's and is required to sign off on Forms 2 & 3.*
- **Submitter:** The person (System Integrator or PTC employee) who submits a possible change to the PTC Manager. *Fills out Form 1.*
- **System Integrator Design Team Leader:** The System Integrator representative who is in charge of company efforts on the project, and in a position, evaluates changes (ECO), as well as handles any maintenance or Hot Fix issues. *Reviews all Form 1's coming from the PTC, and is required to sign off on Form 3, prepares any required documents for system Hot fixes.*

It is not uncommon for the same individual to both evaluate a change and implement it.

Note: There are some very rare instances where an ECO is generated that has impacts to the PTC tolling system where the entire ECO process is done by PTC staff only and there is no interaction with System Integrator other than processing the forms for history.

The Paper Forms

Blank paper forms are included with this document and are stored on the PTC network. (\\cofs2\department\Communications_&_Public_Relations\ETC\ECOs)

FORM #1: Reporting a Change

When filling out Form 1, include the following information:

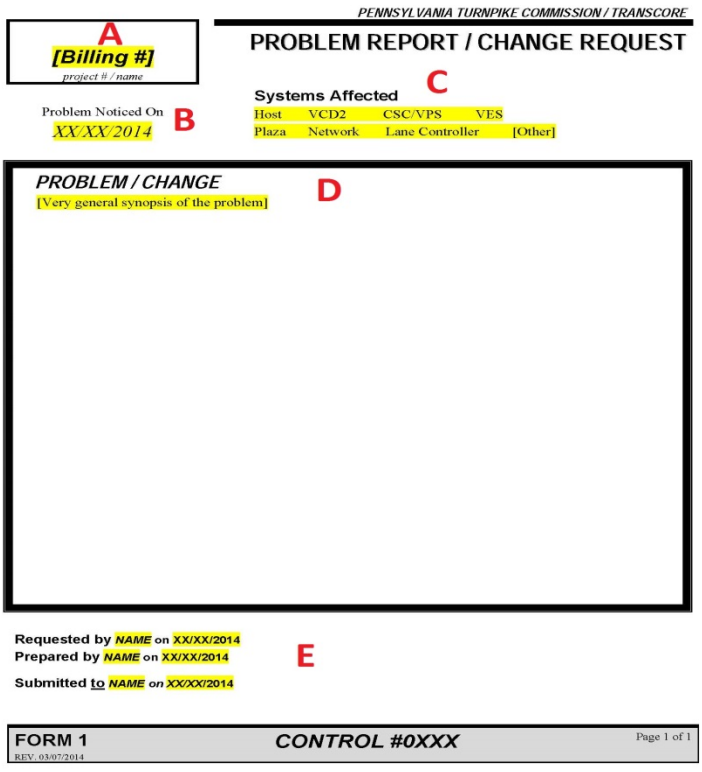
A. Project #. This is the BILLING number and can be added at System Integrator if the submitter doesn't know it. *(OPTIONAL)*

B. Date on which the problem was noticed/noted. *(REQUIRED)*

C. System(s) affected by the problem. Only include the system(s) that are affected by this change. *(REQUIRED)*

D. Description of the problem. *(REQUIRED)*

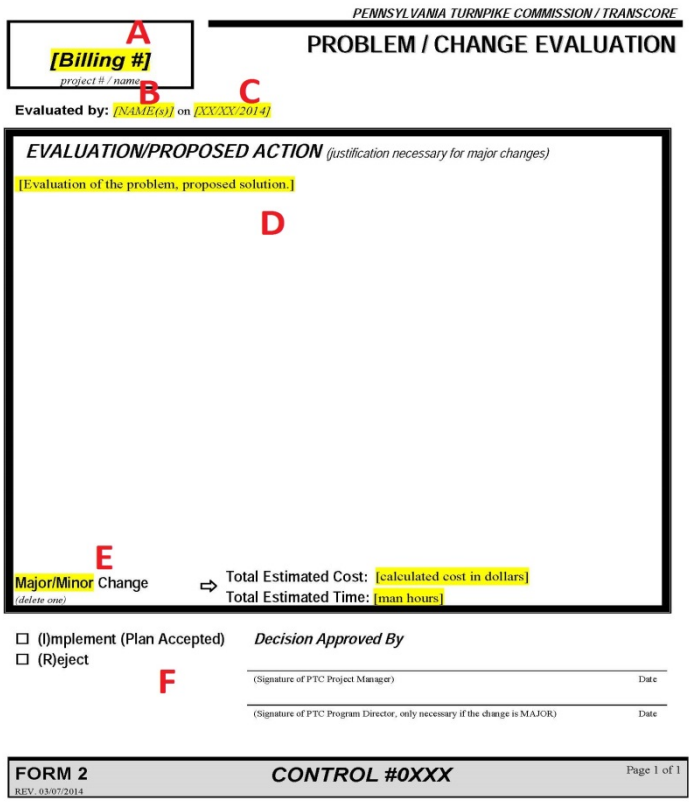
E. The requestors Name and date, preparer's name and date, and the PTC Project Manager (submitted to section), and the date submitted. *(REQUIRED)*



FORM #2: Evaluating a Change

The evaluator (assigned by the System Integrator Design Team Leader, in conjunction with the PTC Project Manager) will fill out Form 2. Required information includes:

A. Project #. This is the billing number, as appeared on Form 1. *(OPTIONAL)*
B. Evaluator's name *(REQUIRED)*
C. Date of the evaluation *(REQUIRED)*
D. Evaluation/Proposed Action: Is the change described in Form 1 necessary, what should be done to fix the change requested in Form 1. *(REQUIRED)*
E. Major/Minor Change. A minor change does not impact the budget and/or schedule, while a major change does. If the change is major, the evaluator must also determine total estimated cost and time to effect the change. *(REQUIRED)*
F. Implement or Reject changes Signed by PTC Project Manager and ETC Director if the change is a Major Change. *(REQUIRED)*


PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE
PROBLEM / CHANGE EVALUATION
A
[Billing #]
project # / name
B
C
Evaluated by: [NAME(s)] on [XX/XX/2014]
EVALUATION/PROPOSED ACTION (justification necessary for major changes)
[Evaluation of the problem, proposed solution.]
D
E
Major/Minor Change
(delete one)
Total Estimated Cost: [calculated cost in dollars]
Total Estimated Time: [man hours]
☐ (I)mplement (Plan Accepted)
☐ (R)eject
Decision Approved By
F
(Signature of PTC Project Manager) Date
(Signature of PTC Program Director, only necessary if the change is MAJOR) Date
FORM 2
REV. 03/07/2014
CONTROL #0XXX
Page 1 of 1

FORM #3: Implementing a Change

The System Integrator Design Team Leader (the person who will make the actual change) must submit Form 3 before deploying the changes to production, providing the following information:

A. Project #. (Billing number.) *(OPTIONAL)*
B. System Integrator Design Team Leader name and the date *(REQUIRED)*

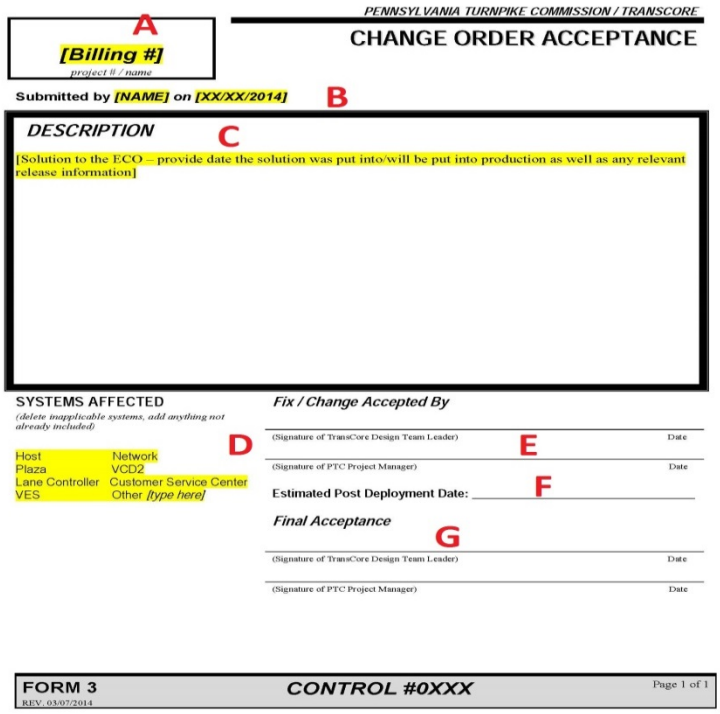
C. Description of the work completed (based on the Form 2 evaluation). *(REQUIRED)*

D. Systems affected. Only include the system(s) that are affected by this change. *(REQUIRED)*

E. Fix/Change Approved by- Once the changes have been tested, the PTC Project Manager and System Integrator Design Team Leader sign and date that the work is now ready for deployment. *(REQUIRED)*

F. Estimated Post Deployment Period – Where applicable the PTC Project Manager will establish a time period by which the implemented changes will be monitored for any new issues that may arise. *(REQUIRED)*

Post Deployment Work section – This section will be signed when the Post Deployment Period (where applicable) has passed without issue and when all Toll System documentation affected by the ECO changes has been updated. *(REQUIRED)*



PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

CHANGE ORDER ACCEPTANCE

A

[Billing #]

project # / name

Submitted by [NAME] on [XX/XX/2014] B

DESCRIPTION C

[Solution to the ECO – provide date the solution was put into/will be put into production as well as any relevant release information]

SYSTEMS AFFECTED

(delete inapplicable systems, add anything not already included)

D

Host	Network
Plaza	VCD2
Lane Controller	Customer Service Center
VES	Other [type here]

Fix / Change Accepted By

(Signature of TransCore Design Team Leader) Date

E

(Signature of PTC Project Manager) Date

Estimated Post Deployment Date: F

Final Acceptance

G

(Signature of TransCore Design Team Leader) Date

(Signature of PTC Project Manager) Date

FORM 3 CONTROL #0XXX Page 1 of 1

REV: 03/07/2014

FORM #3H: Hot Fix Approval

The System Integrator Design Team Leader (the person who will make the actual change) must submit Form 3H before or after deploying the changes to production depending on the urgency/timing of the change, providing the following information:

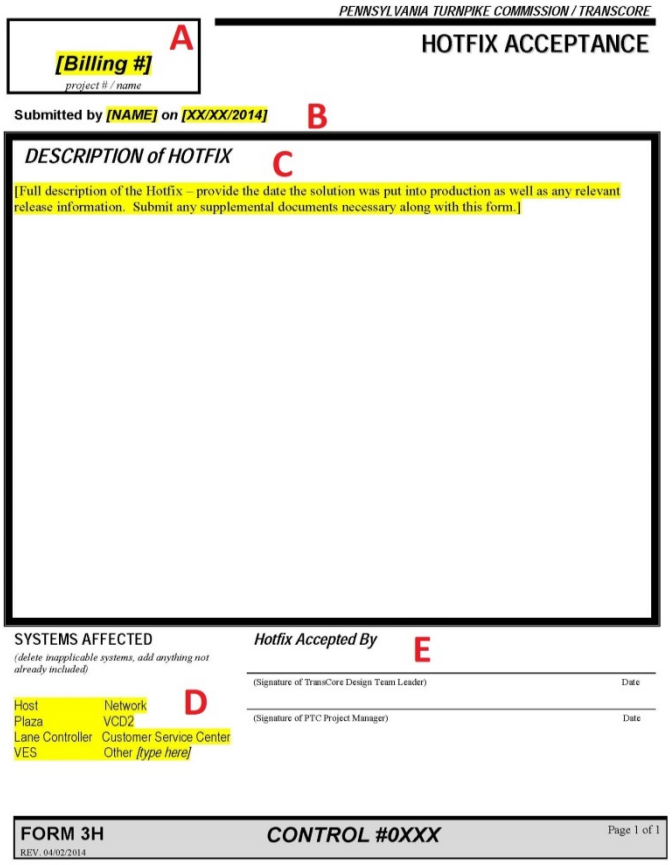
A. Project #. (Billing number.) *(OPTIONAL)*

B. System Integrator Design Team Leader name and the date. *(REQUIRED)*

C. Description of the Hot Fix required and the work done to complete the fix. *(REQUIRED)*

D. Systems affected. Only include the system(s) that are affected by this change. *(REQUIRED)*

E. Hot Fix Approved by- The PTC Project Manager and System Integrator Design Team Leader sign and date that the work is now ready for deployment to production. *(REQUIRED)*


PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

HOTFIX ACCEPTANCE

A

[Billing #]

project # / name

Submitted by [NAME] on [XX/XX/2014] B

DESCRIPTION of HOTFIX C

[Full description of the Hotfix – provide the date the solution was put into production as well as any relevant release information. Submit any supplemental documents necessary along with this form.]

SYSTEMS AFFECTED

(delete inapplicable systems, add anything not already included)

D

Host	Network
Plaza	VCD2
Lane Controller	Customer Service Center
VES	Other [type here]

Hotfix Accepted By E

(Signature of TransCore Design Team Leader) Date

(Signature of PTC Project Manager) Date

FORM 3H CONTROL #0XXX Page 1 of 1

REV. 04/02/2014

FORM #3P: Parameter change Approval

The System Integrator Design Team Leader (the person who will make the actual change) must submit Form 3P before or after deploying the changes to production depending on the urgency/timing of the change, providing the following information:

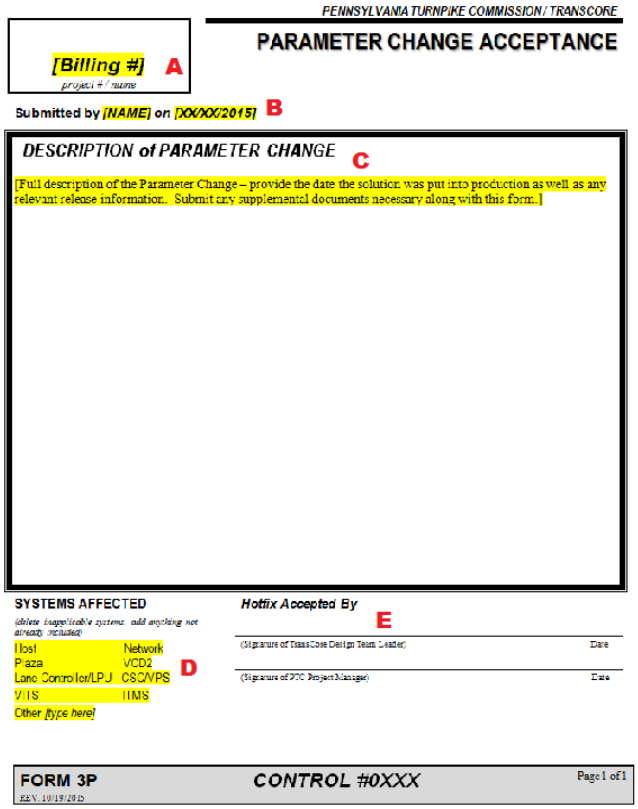
A. Project #. (Billing number.) *(OPTIONAL)*

B. System Integrator Design Team Leader name and the date. *(REQUIRED)*

C. Description of the Parameter Change required and the work done to complete the fix. *(REQUIRED)*

D. Systems affected. Only include the system(s) that are affected by this change. *(REQUIRED)*

E. Parameter Change Approved by- The PTC Project Manager and System Integrator Design Team Leader sign and date that the work is now ready for deployment to production. *(REQUIRED)*



PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

PARAMETER CHANGE ACCEPTANCE

[Billing #] A
project # / name

Submitted by [NAME] on [XX/XX/2015] B

DESCRIPTION of PARAMETER CHANGE C

[Full description of the Parameter Change – provide the date the solution was put into production as well as any relevant release information. Submit any supplemental documents necessary along with this form.]

SYSTEMS AFFECTED
(delete inapplicable systems add anything not already included)

Host	Network
Plaza	VCD2
Lane Controller/LPJ	CSC/VPS
VTIS	TIMS

Other [type here] D

Hotfix Accepted By E

(Signature of TransCore Design Team Leader) Date

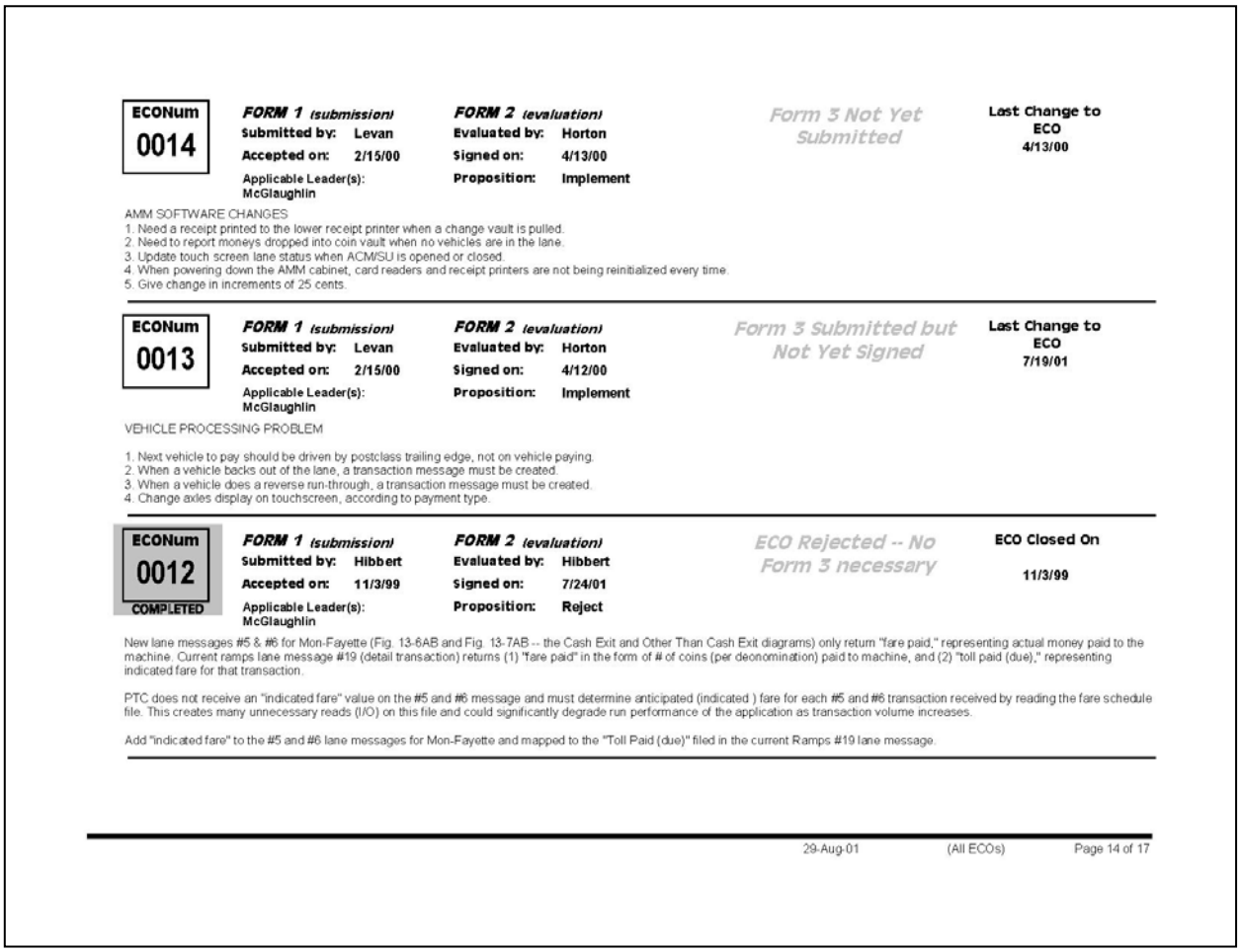
(Signature of PTC Project Manager) Date

FORM 3P CONTROL #0XXX Page 1 of 1
REV. 10/19/2015

ECO Reports

- Control Person currently sends the PTC one report each month: (distributed in PDF Format)
  - Open ECO list - This contains any open ECO lists, a sample is shown below.

The PTC can also request an Open/Closed ECO list from the Control Person on an as needed basis.



ECONum 0014

FORM 1 (submission)
Submitted by: Levan
Accepted on: 2/15/00
Applicable Leader(s): McGlaughlin

FORM 2 (evaluation)
Evaluated by: Horton
Signed on: 4/13/00
Proposition: Implement

Form 3 Not Yet Submitted

Last Change to ECO 4/13/00

AMM SOFTWARE CHANGES
1. Need a receipt printed to the lower receipt printer when a change vault is pulled.
2. Need to report moneys dropped into coin vault when no vehicles are in the lane.
3. Update touch screen lane status when ACM/SU is opened or closed.
4. When powering down the AMM cabinet, card readers and receipt printers are not being reinitialized every time.
5. Give change in increments of 25 cents.

ECONum 0013

FORM 1 (submission)
Submitted by: Levan
Accepted on: 2/15/00
Applicable Leader(s): McGlaughlin

FORM 2 (evaluation)
Evaluated by: Horton
Signed on: 4/12/00
Proposition: Implement

Form 3 Submitted but Not Yet Signed

Last Change to ECO 7/19/01

VEHICLE PROCESSING PROBLEM

1. Next vehicle to pay should be driven by postclass trailing edge, not on vehicle paying.
2. When a vehicle backs out of the lane, a transaction message must be created.
3. When a vehicle does a reverse run-through, a transaction message must be created.
4. Change axles display on touchscreen, according to payment type.

ECONum 0012 COMPLETED

FORM 1 (submission)
Submitted by: Hibbert
Accepted on: 11/3/99
Applicable Leader(s): McGlaughlin

FORM 2 (evaluation)
Evaluated by: Hibbert
Signed on: 7/24/01
Proposition: Reject

ECO Rejected -- No Form 3 necessary

ECO Closed On 11/3/99

New lane messages #5 & #6 for Mon-Fayette (Fig. 13-6AB and Fig. 13-7AB -- the Cash Exit and Other Than Cash Exit diagrams) only return "fare paid," representing actual money paid to the machine. Current ramps lane message #19 (detail transaction) returns (1) "fare paid" in the form of # of coins (per deonomination) paid to machine, and (2) "toll paid (due)," representing indicated fare for that transaction.

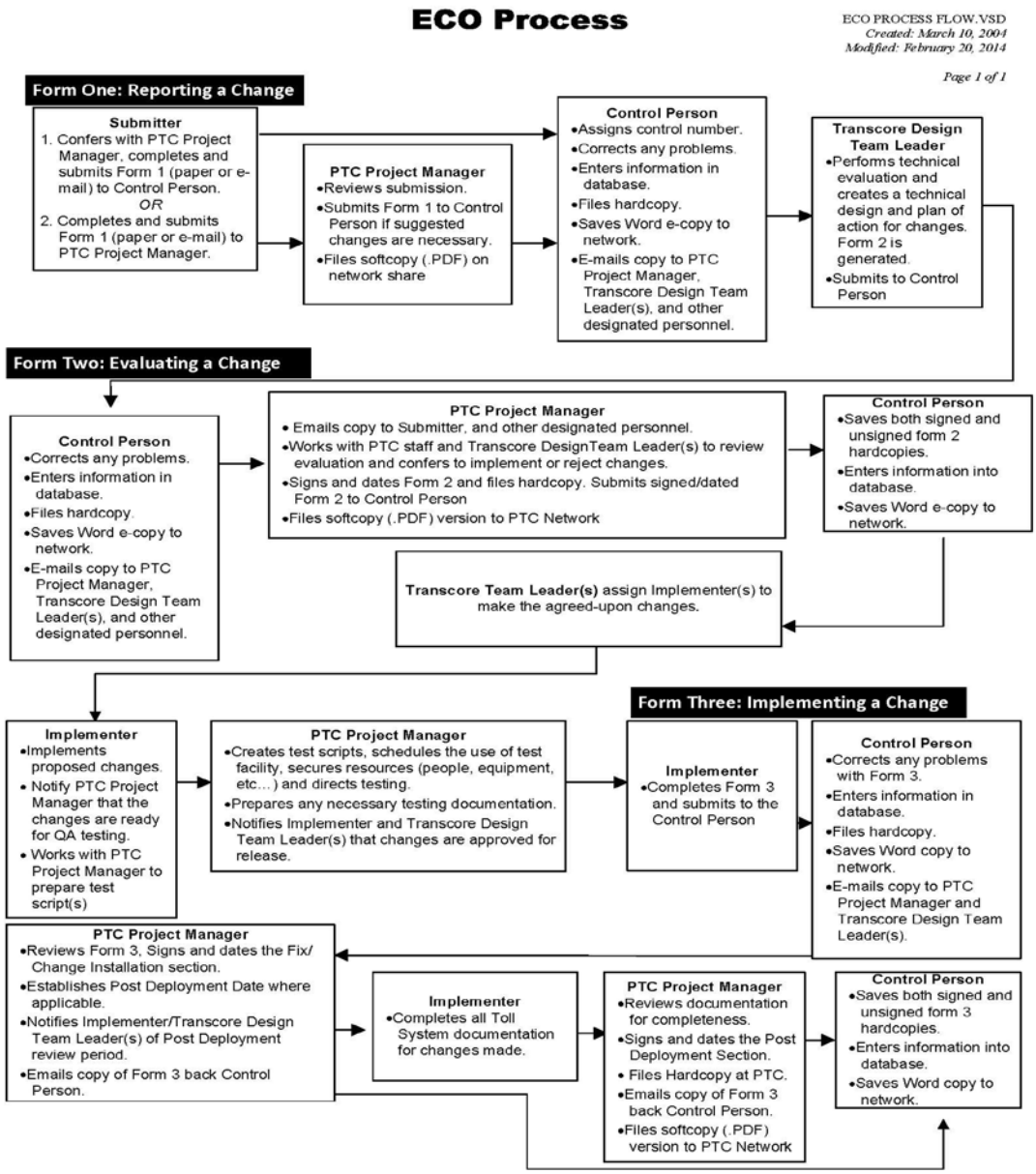
PTC does not receive an "indicated fare" value on the #5 and #6 message and must determine anticipated (indicated) fare for each #5 and #6 transaction received by reading the fare schedule file. This creates many unnecessary reads (I/O) on this file and could significantly degrade run performance of the application as transaction volume increases.

Add "indicated fare" to the #5 and #6 lane messages for Mon-Fayette and mapped to the "Toll Paid (due)" filed in the current Ramps #19 lane message.

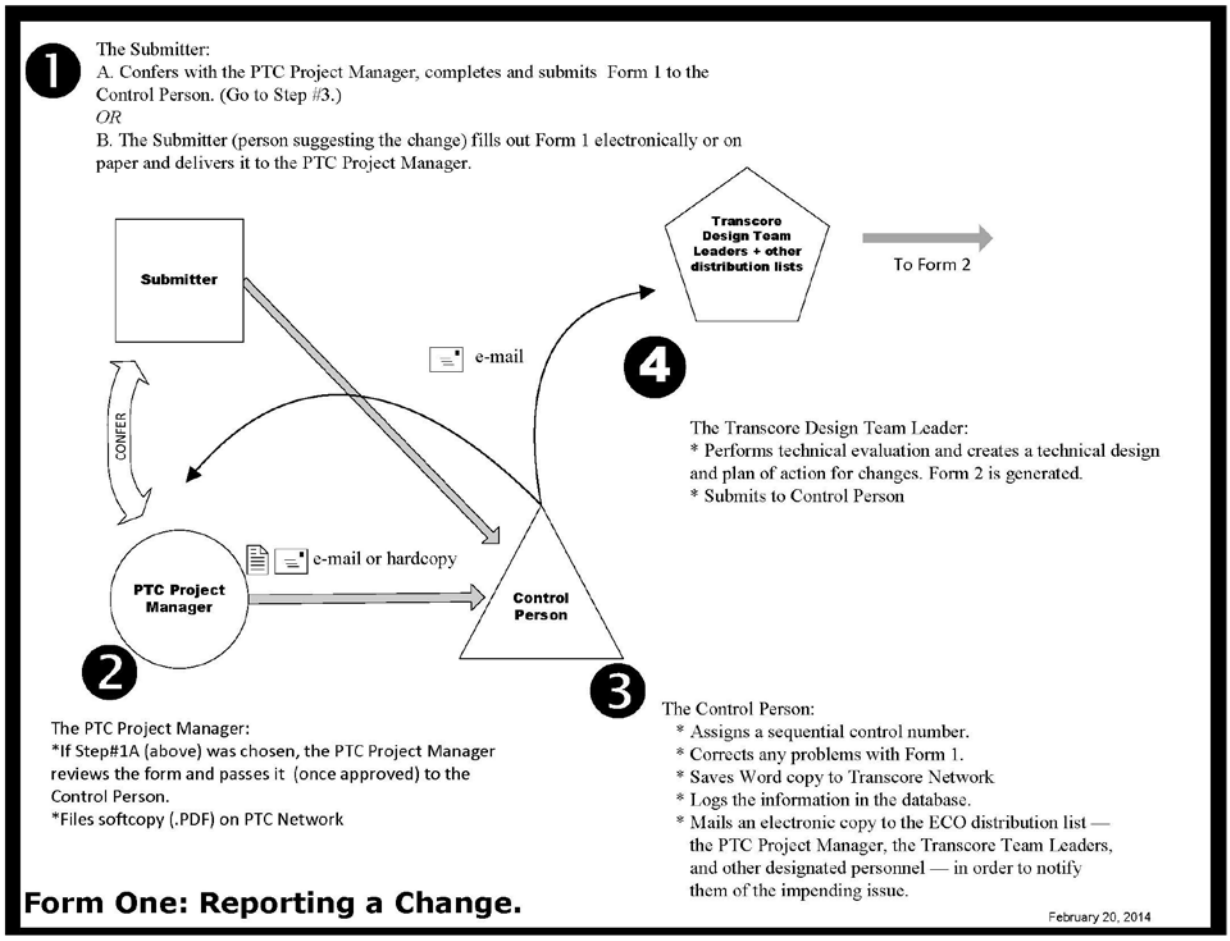
29-Aug-01 (All ECOs) Page 14 of 17

A sample report page is included here. Note that completed ECOs are identified by a shaded number box, and that a description is provided as to what stage each ECO has reached.

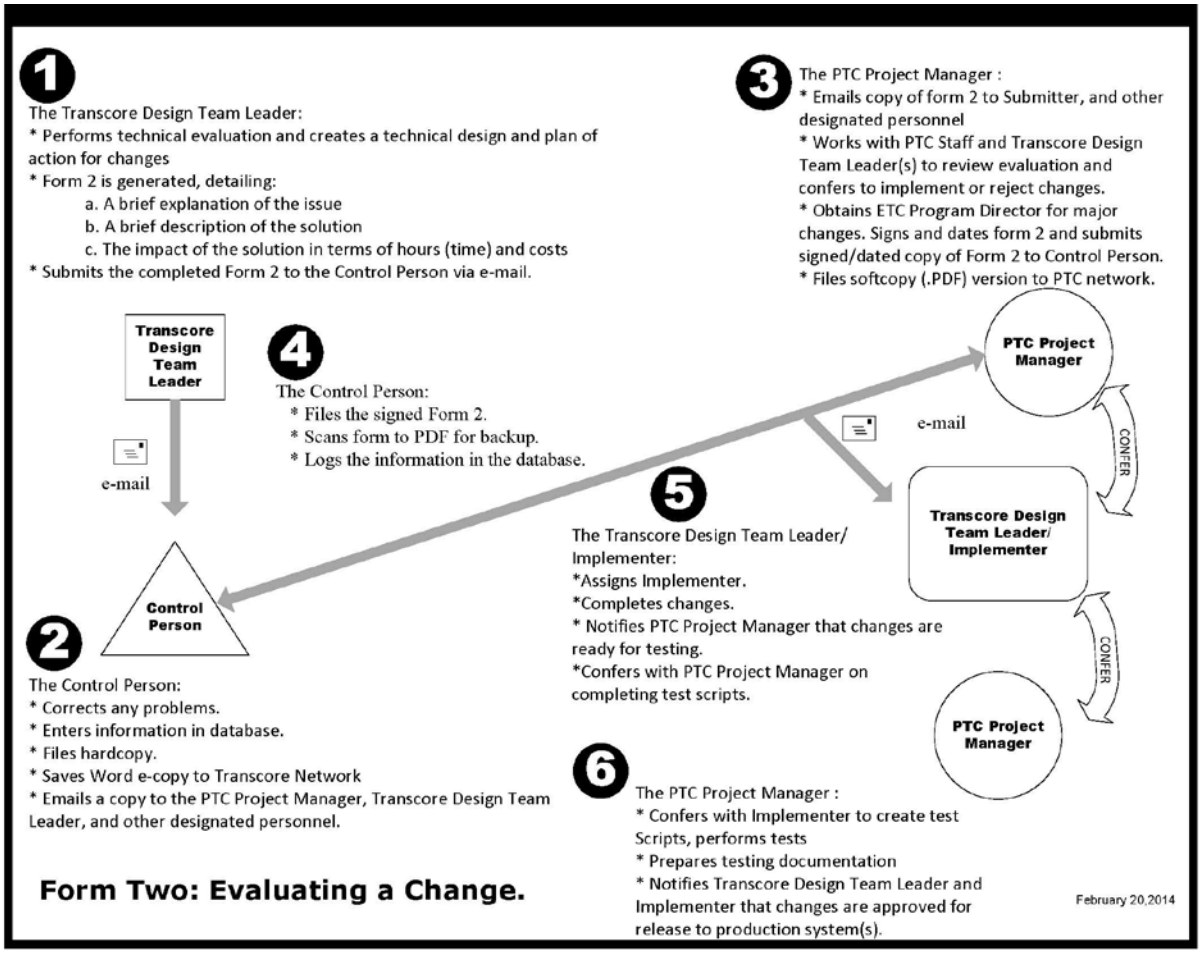
ECO Process Flow Chart for Forms 1-3:



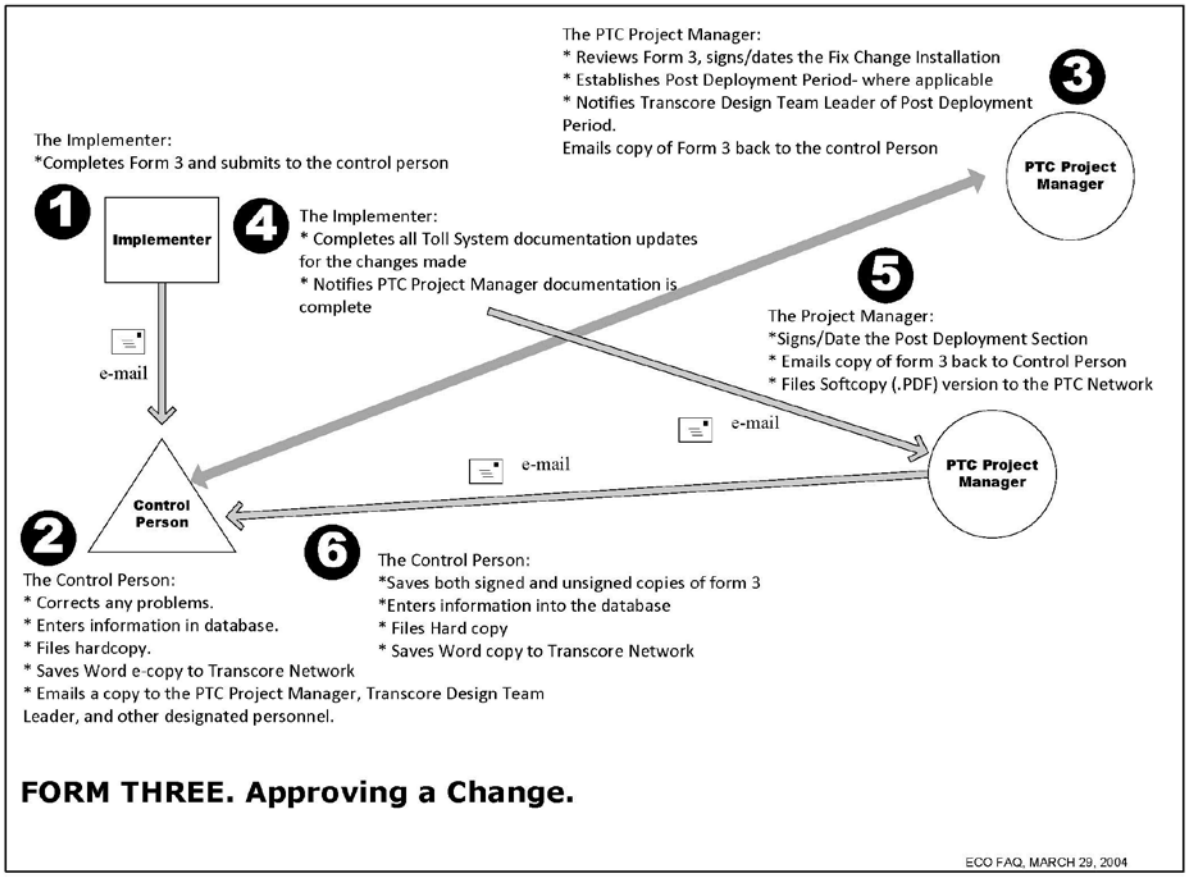
ECO Process Forms 1-3 Stage 1:



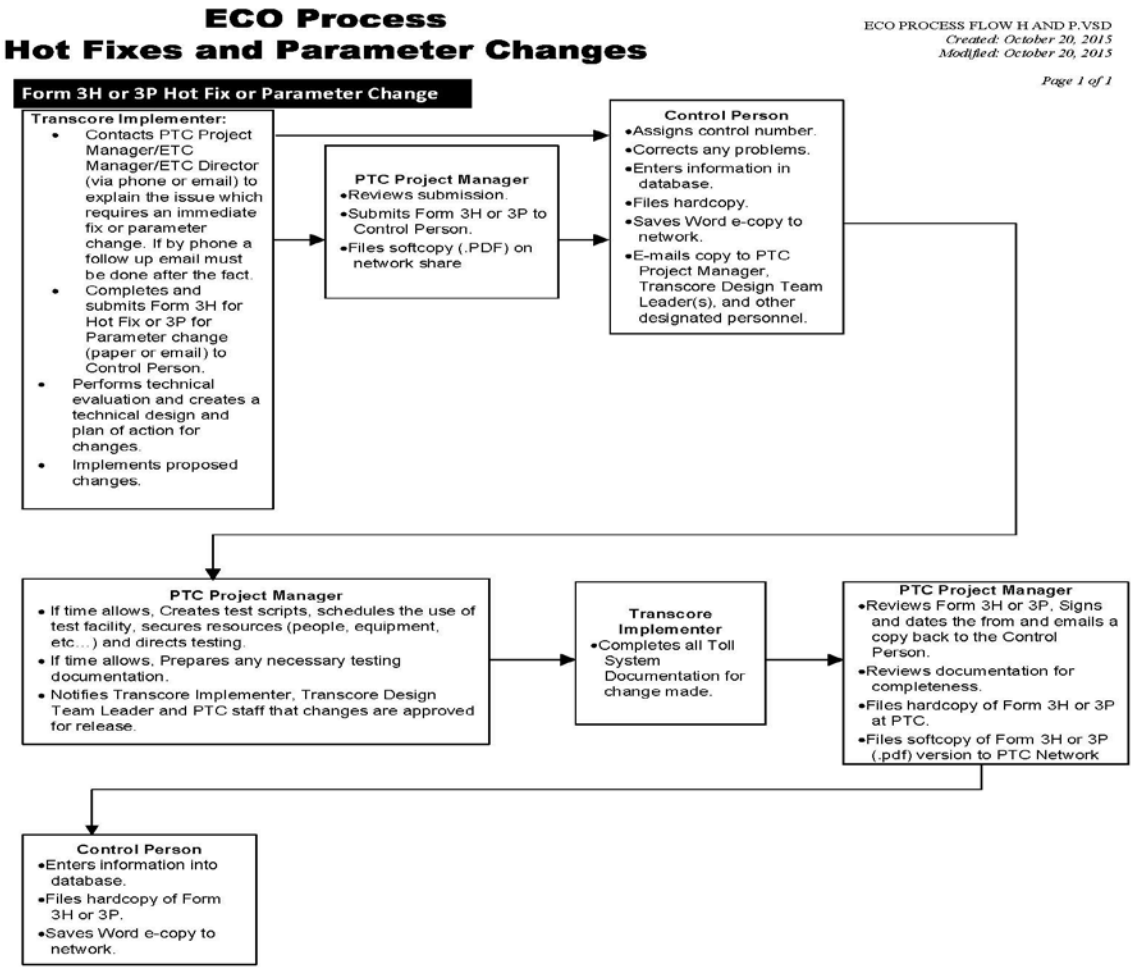
ECO Process Forms 1-3 Stage 2:



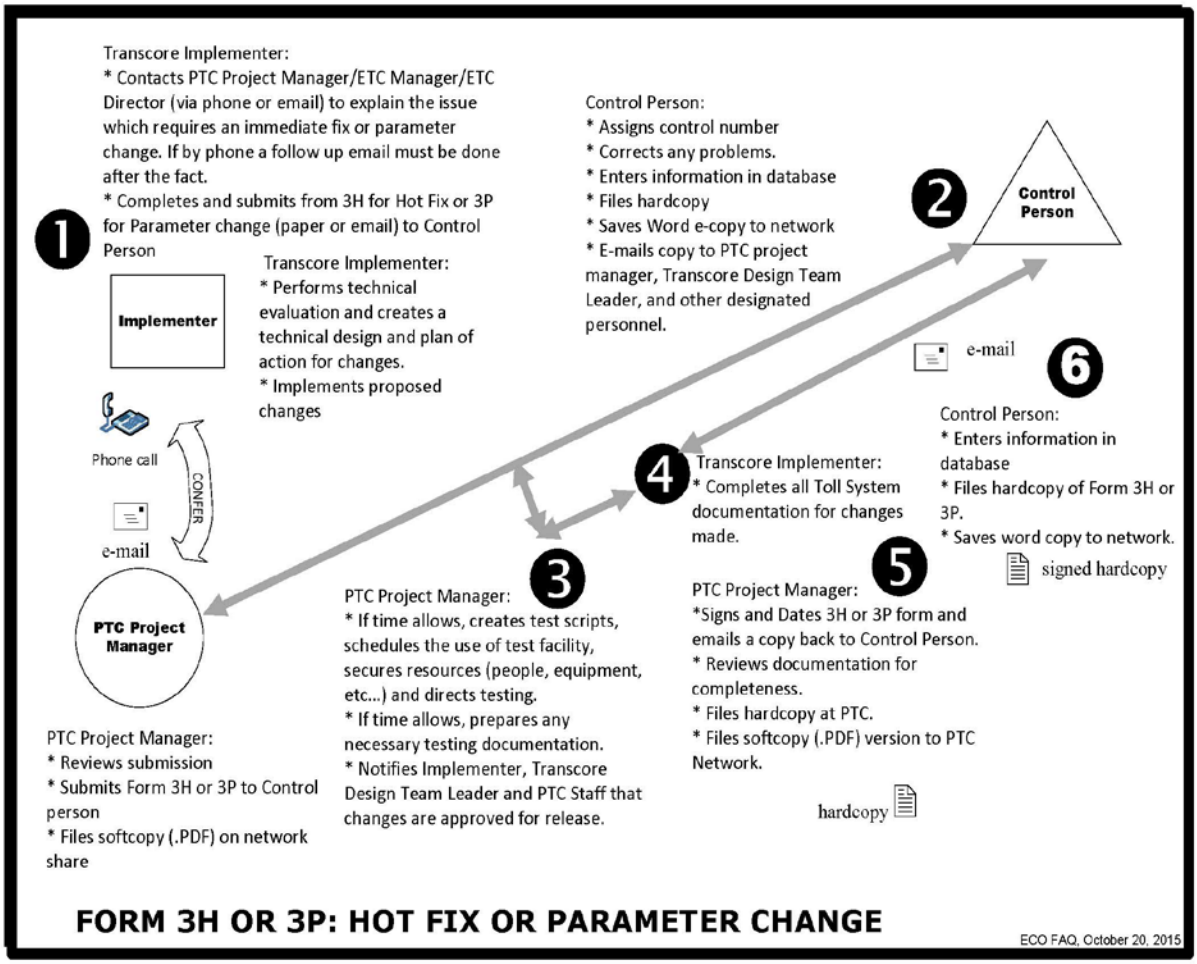
ECO Process Forms 1-3 Stage 3:



ECO Process Flow Chart for Form 3H or 3P:


ECO Process
Hot Fixes and Parameter Changes
ECO PROCESS FLOW H AND P.VSD
Created: October 20, 2015
Modified: October 20, 2015
Page 1 of 1
Form 3H or 3P Hot Fix or Parameter Change
Transcore Implementer:
Contacts PTC Project Manager/ETC Manager/ETC Director (via phone or email) to explain the issue which requires an immediate fix or parameter change. If by phone a follow up email must be done after the fact.
Completes and submits Form 3H for Hot Fix or 3P for Parameter change (paper or email) to Control Person.
Performs technical evaluation and creates a technical design and plan of action for changes.
Implements proposed changes.
PTC Project Manager
•Reviews submission.
•Submits Form 3H or 3P to Control Person.
•Files softcopy (.PDF) on network share
Control Person
•Assigns control number.
•Corrects any problems.
•Enters information in database.
•Files hardcopy.
•Saves Word e-copy to network.
•E-mails copy to PTC Project Manager, Transcore Design Team Leader(s), and other designated personnel.
PTC Project Manager
If time allows, Creates test scripts, schedules the use of test facility, secures resources (people, equipment, etc…) and directs testing.
If time allows, Prepares any necessary testing documentation.
Notifies Transcore Implementer, Transcore Design Team Leader and PTC staff that changes are approved for release.
Transcore Implementer
•Completes all Toll System Documentation for change made.
PTC Project Manager
•Reviews Form 3H or 3P. Signs and dates the from and emails a copy back to the Control Person.
•Reviews documentation for completeness.
•Files hardcopy of Form 3H or 3P at PTC.
•Files softcopy of Form 3H or 3P (.pdf) version to PTC Network
Control Person
•Enters information into database.
•Files hardcopy of Form 3H or 3P.
•Saves Word e-copy to network.

ECO Process Forms 3H or 3P:



ECO Form Samples:

ECO Form 1 Sample:

PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

[Billing #]
project # / name

PROBLEM REPORT / CHANGE REQUEST

Problem Noticed On
XX/XX/2014

Systems Affected

Host	VCD2	CSC/VPS	VES
Plaza	Network	Lane Controller	[Other]

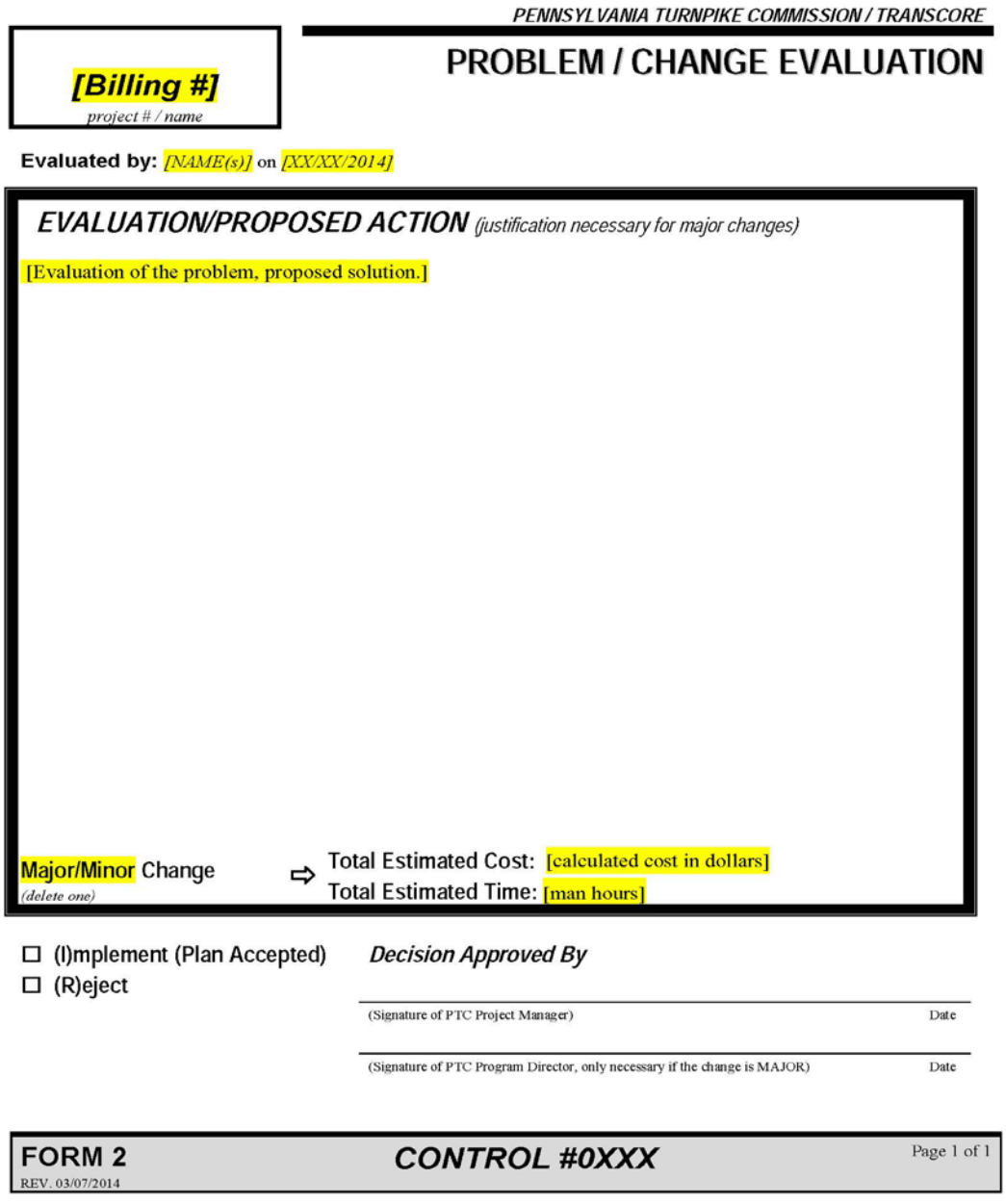
PROBLEM / CHANGE
[Very general synopsis of the problem]

Requested by *NAME* on XX/XX/2014
Prepared by *NAME* on XX/XX/2014

Submitted to *NAME* on *XX/XX*/2014

FORM 1 ***CONTROL #0XXX*** Page 1 of 1
REV. 03/07/2014

ECO Form 2 Sample:



PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

[Billing #]
project # / name

PROBLEM / CHANGE EVALUATION

Evaluated by: *[NAME(s)]* on *[XX/XX/2014]*

EVALUATION/PROPOSED ACTION *(justification necessary for major changes)*

[Evaluation of the problem, proposed solution.]

Major/Minor Change
(delete one)

⇨ Total Estimated Cost: [calculated cost in dollars]
Total Estimated Time: [man hours]

☐ (I)mplement (Plan Accepted)
☐ (R)eject

Decision Approved By

(Signature of PTC Project Manager) Date

(Signature of PTC Program Director, only necessary if the change is MAJOR) Date

FORM 2 ***CONTROL #0XXX*** Page 1 of 1
REV. 03/07/2014

ECO Form 3 Sample:

PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

CHANGE ORDER ACCEPTANCE

[Billing #]
project # / name

Submitted by *[NAME]* on *[XX/XX/2014]*

DESCRIPTION

[Solution to the ECO – provide date the solution was put into/will be put into production as well as any relevant release information]

SYSTEMS AFFECTED

(delete inapplicable systems, add anything not already included)

Host	Network
Plaza	VCD2
Lane Controller	Customer Service Center
VES	Other *[type here]*

Fix / Change Accepted By

(Signature of TransCore Design Team Leader) Date

(Signature of PTC Project Manager) Date

Estimated Post Deployment Date: _____

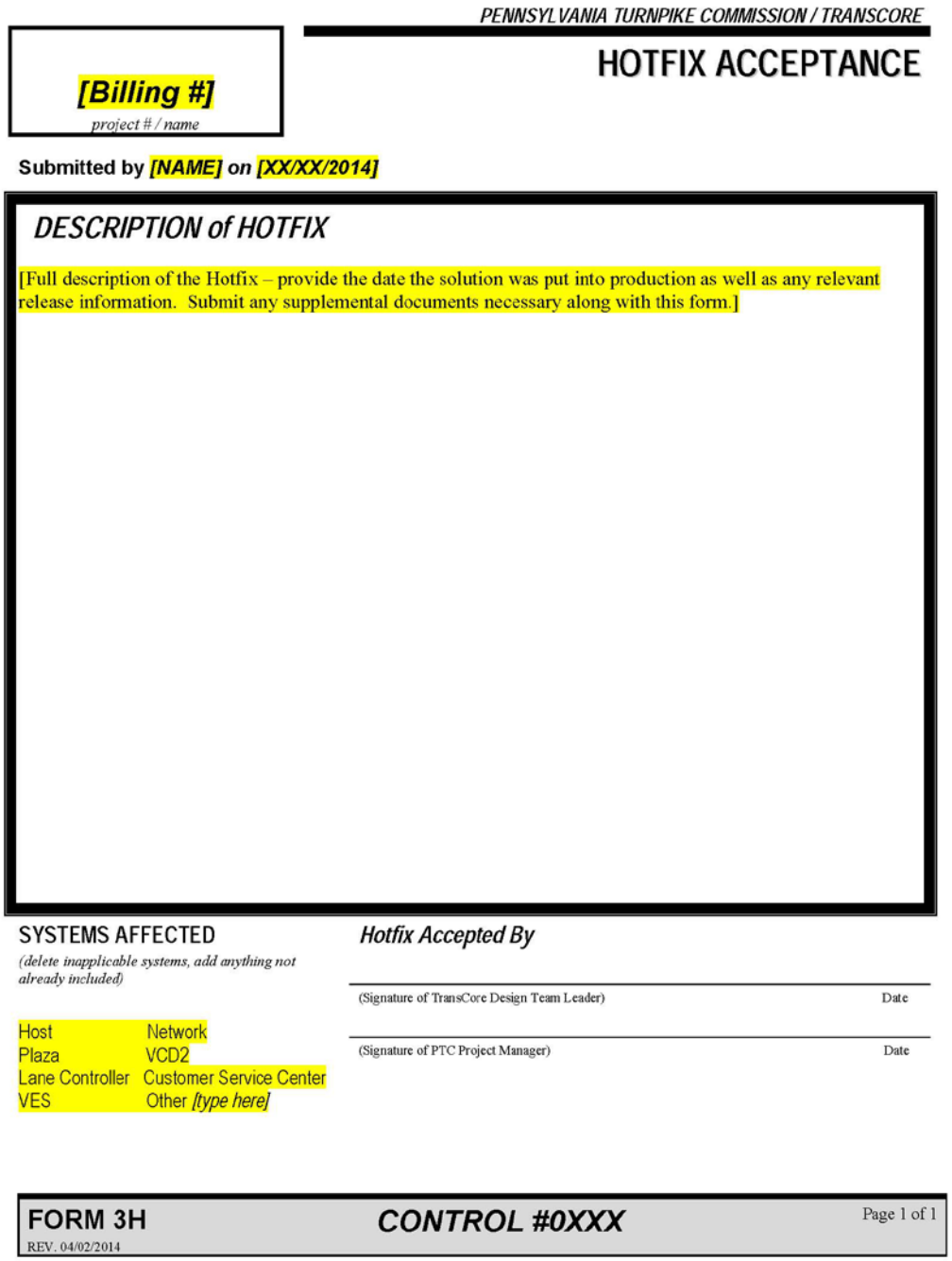
Final Acceptance

(Signature of TransCore Design Team Leader) Date

(Signature of PTC Project Manager) Date

FORM 3 ***CONTROL #0XXX*** Page 1 of 1
REV. 03/07/2014

ECO Form 3H Sample:



PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

HOTFIX ACCEPTANCE

[Billing #]
project # / name

Submitted by *[NAME]* on *[XX/XX/2014]*

DESCRIPTION of HOTFIX

[Full description of the Hotfix – provide the date the solution was put into production as well as any relevant release information. Submit any supplemental documents necessary along with this form.]

SYSTEMS AFFECTED

(delete inapplicable systems, add anything not already included)

Host	Network
Plaza	VCD2
Lane Controller	Customer Service Center
VES	Other *[type here]*

Hotfix Accepted By

(Signature of TransCore Design Team Leader) Date

(Signature of PTC Project Manager) Date

FORM 3H ***CONTROL #0XXX*** Page 1 of 1

REV. 04/02/2014

ECO Form 3P Sample:

PENNSYLVANIA TURNPIKE COMMISSION / TRANSCORE

PARAMETER CHANGE ACCEPTANCE

[Billing #]
project # / name

Submitted by *[NAME]* on *[XX/XX/2015]*

DESCRIPTION of PARAMETER CHANGE

[Full description of the Parameter Change – provide the date the solution was put into production as well as any relevant release information. Submit any supplemental documents necessary along with this form.]

SYSTEMS AFFECTED

(delete inapplicable systems; add anything not already included)

Host	Network
Plaza	VCD2
Lane Controller/LPJ	CSC/VPS
VTS	TMS

Other *[type here]*

Hotfix Accepted By

(Signature of TransCore Design Team Leader) Date

(Signature of PTC Project Manager) Date

FORM 3P ***CONTROL #0XXX*** Page 1 of 1

REV. 10/19/2015

Exhibit B
Defined Terms and Acronyms

Exhibit B: Defined Terms and Acronyms

Defined Terms

Term	Definition
Acceptance	Approval of Work based on meeting certain conditions, including functional; operational; performance, and test requirements set forth in the Scope of Work and Contract.
Active Directory	Microsoft's trademarked directory service. A centralized and standardized system that automates network management of user data, security, and distributed resources, and enables interoperation with other directories.
Alert(s)	Electronic notifications sent by the System to notify authorized users of System issues or conditions that may require attention.
Approve	The term "Approve" and its variations (e.g., "Approval") when capitalized in this Agreement refer to the Commission's Acceptance of a document, condition, action or deliverable in writing for its own internal purposes. The Commission's Approval shall not be construed to mean the Commission's endorsement or assumption of liability nor shall it relieve the Contractor of its responsibilities under the Agreement.
As-Built Drawings	Documents and other items set forth in this Scope of Work that constitute a complete and accurate record of the System as Designed, delivered, installed and Approved.
Authorized User	Using a role-based login, Authorized Users are users authorized by the Commission to have specific privileges allowing access to information and functionality on the System not afforded to other users.
Automatic License Plate Recognition (ALPR)	The process whereby license plate characters and issuing jurisdiction are extracted from an image of a vehicle via automated (non-human) means. This may also include automatically determining and reporting license plate type if this capability is provided by the System. Also referred to as "Optical Character Recognition".
Automatic Vehicle Classification (AVC)	Lane system that uses specialized devices, sensors, and Software to recognize that a vehicle has entered the tolling zone and to classify the vehicle according to PTC classification rules.
Automatic Vehicle Identification (AVI)	Lane system comprised of radio frequency antennas and readers that communicate with transponders that are affixed to vehicles in order to read and report the transponder identification information.
Away Agency	An agency or interoperable organization with roadways traveled on by a Pennsylvania E-ZPass customer whose account is not with that agency or interoperable organization.

Term	Definition
Buffered Transponder Read	Transponder reads that are retained in the AVI reader when communications between the reader and the zone controller are down and not transmitted to the zone controller at the time of the Transponder read. Upon reestablishment of the communications such Transponder reads are transmitted to the zone controller and are called Buffered Transponder Read(s).
Business Day	Each day, exclusive of Saturdays, Sundays and Holidays, beginning at 12:00 a.m. (midnight) Eastern Time (standard or daylight as applicable).
Business Rules	A set of rules that defines how the Cashless Tolling System shall respond to various situations and conditions that occur during the toll collection process based on business case and policy decisions Approved by the Commission.
Calendar Day	Every day shown on the calendar, beginning at 12:00 a.m. (midnight) Eastern Time (standard or daylight as applicable).
Cashless Tolling	A tolling process that enables an agency to bill or debit the toll accounts of registered vehicles for fares they incur while moving along a toll facility. Patrons are identified by the use of an on-board transponder or by capturing the vehicle's license plate.
Cashless Tolling Plaza	A toll collection facility located on a corridor or roadway that provides Cashless Toll Collection. Also referred to as "toll location or "toll Plaza".
Cashless Tolling System	Refers to the entirety of the infrastructure, Hardware, Software and Services provided by the Contractor for this Contract. This includes the lane systems and all lane Equipment, plaza/host system, MOMS and the DVAS. Also referred to as "the System" and "the Cashless Tolling System".
Class Mismatch	A condition in the transaction where the vehicle class as determined by the AVC does not match the vehicle class encoded in the transponder.
Commission	The Pennsylvania Turnpike Commission (the "Commission") operates the Pennsylvania Turnpike. To avoid unnecessary repetition of expressions, whenever in the Contract Documents the term "Commission" is used, it is understood that "or the PTC designated representative" is a part of the term unless specifically indicated otherwise. Such designated representative will be identified by the Commission.
Commissioning	The test that occurs upon completion and Approval of installation that indicates readiness for operations. Upon the Approval of the Commissioning Test at each Cashless Tolling Plaza, the Cashless Tolling Plaza shall be considered Commissioned.

Term	Definition
Conformed Scope of Work	The updated Scope of Work and Requirements as agreed to between the Commission and the Contractor, executed as part of the Contract, including any Approved amendments generated during the ITN and negotiation process. When the term "Scope of Work" is referred to in the executed Contract Documents it is referring to the Conformed Scope of Work, unless otherwise indicated.
Contract	The entire and integrated contract between the parties there under which supersedes all prior negotiations, representations, or contracts, either written or oral. The Contract Documents, as amended from time to time, form the contract between the Commission and the Contractor, setting forth the obligations of the parties including, but not limited to, the performance of the Work and the basis of payment. May also be referred to as "Agreement".
Contract Documents	The documents forming the Contract including all addenda or appendices thereto, any supplemental agreements, amendments, Contract modifications, and all provisions required by law to be inserted in the Contract, whether actually inserted or not.
Contract Price	The maximum amount of money payable by the Commission to the Contractor for completion of the Work in accordance with the Contract Documents.
Contract Term	The term of the Contract, including any authorized renewals and extensions.
Contractor	In the context of the Contract Documents, Contractor means any company, firm, partnership, corporation, association, joint venture, or other legal entity permitted by law to perform the Work in the State of Pennsylvania. Such legal entity shall be the entity that enters into a written Contract with the Commission to perform the Work described in the RFP Documents and Contract Documents.
Dashboard	A visual display of collected information that is consolidated, arranged, and displayed on a screen(s) in an intuitive manner so that the information can be monitored and interpreted at a glance.
Day	Calendar day unless otherwise designated.
Deliverable	Any written document or item of Work provided by the Contractor to the Commission as part of meeting the Scope of Work requirements.
Design	All aspects of Design relating to the Cashless Tolling System and Services as set forth in additional detail in the Contract Documents, including but not limited to the Scope of Work.
Digital Video Audit System (DVAS)	System with cameras and servers located at each Cashless Tolling Plaza that allows remote viewing of vehicular events and video/images in real time or stored for review. DVAS provides transaction/vehicle event data overlaid on video for correlation of vehicle and transaction data.
Diverse Businesses (DB)	A disadvantaged business, minority-owned or women-owned business or service-disabled veteran-owned or veteran-owned small business that has been certified by a third-party certifying organization.

Term	Definition
Document	See "Deliverable"
Electronic Toll Collection (ETC)	A system of integrated devices and components that perform the automatic recording and reporting of vehicle transactions through electronic media in a toll revenue collection system.
Equipment	See Hardware.
E-ZPass	E-ZPass refers to the devices and programs for electronic toll collection at the E-ZPass Group interoperable agencies.
E-ZPass Group	The official name of the Interagency Group (IAG) consortium which consists of 25 member agencies in 15 states as of the date of publication of the RFP that coordinates the operation of E-ZPass, setting the necessary business and technology requirements to make the E-ZPass system interoperable.
File Transfer Protocol/Secure File Transfer Protocol	A fast, application-level protocol widely used for copying/transferring files to and from remote computer systems over a network. This protocol allows users to use FTP (or Secure FTP) commands to work with files, such as listing files and directories on the remote system.
Hardened	A system that has undergone rigorous mechanical, thermal, and component compatibility testing to ensure overall system reliability and consistent performance in the field, however hazardous the environment may be.
Hardware	"Hardware" or "Equipment" is an all-inclusive term to mean the Equipment, Hardware, associated peripherals, associated firmware, electrical and other materials and supplies necessary or furnished by the Contractor to provide Services pursuant to the Contract Documents.
Holidays	The following days are observed as PTC Holidays: A) New Year's Day (January 1); B) Martin Luther King Day (3rd Monday in January); C) Lincoln's Birthday (February 12) D) President's Day (third Monday of February) E) Good Friday (Friday preceding Easter) F) Primary Election Day G) Memorial Day (last Monday in May); H) Flag Day (June 14) I) Independence Day (July 4); J) Labor Day (1st Monday in September); K) Columbus Day (second Monday of October) L) General Election Day M) Veterans' Day (November 11); N) Thanksgiving Day (4th Thursday in November); and O) Christmas Day (December 25). If any Holiday listed in (A) through (O) above falls on a Saturday or Sunday, the previous Friday or following Monday, respectively, shall be considered a Holiday.

Term	Definition
Home Agency	The Home agency is the agency that establishes and/or maintains the customer's account and issues the customer's transponder(s), if applicable.
IAG Class	The numeric vehicle class code that is programmed in the transponder and obtained from the transponder data as detailed in Attachment 16: IAG Mapped Classes.
IAG Mapped Class	The toll Authority vehicle class that the IAG class is mapped to as detailed in Attachment 16: IAG Mapped Classes.
Implementation Phase	The phase of the Project, which begins at Notice to Proceed and ends upon Acceptance of the Cashless Tolling System Implementation at each Cashless Tolling Plaza.
Interagency Group (IAG)	See E-ZPass Group.
Interface	Software program or file exchange that facilitates data exchange from one component of a system to another or between separate systems.
Interoperable (Interoperability)	A general term used to describe a relationship between tolling agencies or entities where their systems are capable of capturing and transmitting transactions generated on an agency's roads by customers of the other agency or entity. Requires that reciprocity agreements between agencies and entities are in place to govern payments and reconciliation.
Key Team Personnel	Key Team Personnel for this Project shall be Project Principal, Project Manager, Technical/Software Development Manager, Lane Technical Lead, Host Technical Lead, Installation Manager, Maintenance Manager and Quality Assurance/Test Manager. This designation requires that certain standards, processes and procedures be followed by the Contractor with regard to Key Team Personnel, as further set forth in the Scope of Work and the Contract Documents. Also referred to as "Key Personnel" or "Key Team Member".
Local Area Network (LAN)	A group of computers and other devices dispersed over a relatively limited area and connected by a communications link that enables any device to interact with any other on the network.
License Plate Image Capture and Processing System (LPICPS)	System that uses a camera(s) to capture and identify vehicle and license plate information, including the use of optical character recognition (OCR) Software.
Maintenance and Software Support Services	The Contractor's responsibility for providing maintenance and Software Support Services as described in this Scope of Work.
Maintenance Online Management System (MOMS)	An automated, fully integrated system that monitors the status of operational Equipment in real time, records Equipment and process failures, electronically notifies Maintenance and PTC personnel, generates and tracks work orders, maintains preventative Maintenance schedules, generates repair history, and maintains parts inventory and asset management, as set forth in the Scope of Work.

Term	Definition
Maintenance Phase	The phase of the Project, which begins at Acceptance, during which the Contractor performs all required Maintenance activities, provides all required Maintenance deliverables and maintains the System.
Non-Revenue Vehicle	Vehicles identified by Pennsylvania Turnpike Commission that are exempt from tolls on Pennsylvania Turnpike toll facilities.
Notice to Proceed (NTP)	A written notice given by the Commission to the Contractor establishing the date on which the Contract Term will commence to run, and on which the Contractor shall start to perform the Contractor's obligations under the Contract Documents. Also referred to as 'NTP.'
Onsite First Integration Test (OFIT)	The test to verify the full functionality of the Cashless Tolling System (in-lane and Plaza/Host) and its compliance with the Contract requirements and the Approved Design in a controlled, onsite environment. Also referred to as "OFIT".
Optical Character Recognition (OCR)	The process whereby license plate characters and issuing jurisdiction are extracted from an image of a vehicle via automated (non-human) means. This may also include automatically determining and reporting license plate type if this capability is provided by the System. Also referred to as "ALPR".
Plans	Documents delivered by the Contractor providing detailed information regarding the Design, development, implementation, and Maintenance of the System.
Plaza	See Toll Plaza.
Pennsylvania Turnpike Commission (PTC)	Refers to the agency created in 1937 to construct, finance, operate and maintain the Pennsylvania Turnpike. In addition to the Pennsylvania Turnpike, the commission also operates the James E. Ross Highway, Amos K. Hutchinson Bypass, Mon/Fayette Expressway and Pittsburgh's Southern Beltway.
Project	The total Work defined in the Scope of Work and as further set forth and detailed in the Contract Documents.
Protocol (telecommunications)	A standardized set of digital rules that specify format, timing, sequencing, and/or error checking for data transmissions.
PTC Designated Representatives	Person or persons authorized by the Commission to represent the Commission ("the PTC") in all dealings with the Contractor. Also referred to as "Authorized Representative".
PTC Class	The vehicle class that is assigned to the transaction after the application of the PTC Business Rules. The PTC class is used to calculate the fare amount for each transaction. Also called the revenue vehicle class.
PTC Operations Group	Department at the PTC responsible for monitoring the System for anomalies and failures and notifying personnel of System issues.
PTC Project Manager	PTC Designated representative who directs Contractor and Approves Contractor submitted Deliverables, with further authority as is set forth in the Contract.

Term	Definition
Radio Frequency Identification (RFID)	For Electronic Toll Collection a subsystem consisting of E-ZPass transponders, antenna(s), and reader equipment installed for a toll lane.
Reciprocity	The mutual acceptance and payment of toll transactions between the Commission and other interoperable agencies and entities.
Revenue Collection	The Cashless Tolling System is installed and operating in the PTC production environment and is collecting, transmitting and reporting tolling data to the Cashless Tolling host system in accordance with the requirements of Article I Scope of Work and the Contract Documents, such that in the sole determination of the Commission tolls can be collected.
Revenue Day	The twenty-four (24) hour period of toll collection day expressed from 00:00:00 to 23:59:59 in military time.
Revenue Vehicle Class	See PTC class.
Scope of Work	Services to be provided by Contractor. Also referred to as "Services" or "Work".
Services	Refer to Scope of Work".
Software	All System Software including the media and documentation that regulate and control the operation of a data processing system by specifying computer programs, procedures and rules required to be provided hereunder as more fully described in the Scope of Work. It includes compilers, library routines, and circuit diagrams.
Subcontractor	Any person, firm or corporation, other than the Contractor's employees, who contracts to furnish labor, materials, or Services at the Site(s) or in connection with the System and Services, whether directly or indirectly, on the Contractor's behalf and whether or not in privity with the Contractor.
Supplier	Any person, firm, or corporation who contracts to furnish materials, Software, Equipment, or supplies for incorporation in or in connection with the System, whether directly or indirectly, on the Contractor's behalf and whether or not in privity with the Contractor.
Surety files	Financial data related to the Post Paid Accounts.
Tag	See "Transponder".
Transponder	An RFID device with a unique identity installed in a vehicle for the purpose of Electronic Toll Collection. E-ZPass is a brand of transponder used by the E-ZPass Inter-Agency Group.
Transponder Status List (TSL)	A file transmitted to the zone controllers through the Cashless Tolling Host systems containing the status of transponders issued by the Pennsylvania CSC and the other interoperable agencies and entities.
Uninterruptible Power Supply (UPS)	A device, connected between a computer (or other electronic Equipment) and a power source (usually an outlet receptacle), that ensures that electrical flow to the computer is not interrupted because of a blackout and, in most cases, protects the computer against potentially damaging events, such as power surges and brownouts.

Term	Definition
Valid Transponder	A transponder that is on the transponder status list (TSL) and has a status of valid, low balance and non-revenue. A valid transponder will post to a Pennsylvania E-ZPass customer account or an Interoperable Agency customer account.
Video Image Toll (VToll)	Usually an image toll transaction that is processed and posted to an account prior to image review verification based on the transponder ID information associated with the image transaction message. These usually occur if the balance temporarily dips to a negative level causing the transponder to be invalid for a short duration.
Video Transaction	A license plate transaction created and transmitted to the CSC/VPC for processing that results from the capture of an image(s) in the lane. Video transactions are generated for vehicles when a valid transponder is not associated with the vehicle or when a vehicle has an invalid transponder. Video transactions not associated to a customer E-ZPass account are used to generate video invoices.
Violation Enforcement List (VEL)	A list of repeat violators license plate numbers that are not pursuable through the CSC/VPC for various reasons that the Commission would like to pursue through manual enforcement action on-site.
Wide Area Network	A geographically widespread communications network that relies on communication capabilities to link the various network segments. A Wide Area Network (WAN) can be one large network, or it can consist of a number of linked LANs (local area networks). See 'Local Area Network.'
Work	All Services which, in the judgment of the Commission, are necessary for completion of the construction and the Project under the Contract Documents and includes, without limitation, all plant, labor, materials, Equipment, systems, Services and Software and other facilities, installation, testing, operations and Maintenance and other things necessary or proper for or incidental to the carrying out and completion of the terms of the Contract Documents. Also referred to as Services.

Acronyms

Acronym	Definition
ADT	Average Daily Traffic
ALPR	Automatic License Plate Recognition
AVC	Automatic Vehicle Classification
AVI	Automatic Vehicle Identification
BOM	Bill of Materials
BRD	Business Rules Document
COTS	Commercial off the Shelf
CPU	Central Processing Unit
CRO	Central Regional Office
CSC	Customer Service Center
DBA	Doing Business As
DMV	Department of Motor Vehicles
DPU	Data Processing Unit
DR	Disaster Recovery
DVAS	Digital Video Audit System
EMI	Electromagnetic Interference
ERO	Eastern Regional Office
ETC	Electronic Toll Collection
FAT	Factory Acceptance Test
FHWA	Federal Highway Administration
FMS	Financial Management System
FTP/SFTP	File Transfer Protocol/Secure File Transfer Protocol
GUI	Graphical User Interface
HVAC	Heating, Ventilation and Air Conditioning
IAG	Interagency Group
ICD	Interface Control Document
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization
IT	Information Technology

Acronym	Definition
ITS	Intelligent Transportation Systems
ITSM	Intelligent Transportation Systems Maintenance
LAN	Local Area Network
LPICPS	Image Capture and Processing System
MOMS	Maintenance On-line Monitoring System
MPT	Maintenance and Protection of Traffic
MTBF	Mean Time Between Failures
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NTP	Network Time Protocol
NTP	Notice to Proceed
OCR	Optical Character Recognition
ODC	Other Direct Costs
OEM	Original Equipment Manufacturer
OFIT	Onsite First Installation Test
OS	Operating System
OSHA	Occupational Safety and Health Administration
PIN	Personal Identification Number
PMP	Project Management Plan
PMR	Project Management Review
PO	Purchase Order
PTC	Pennsylvania Turnpike Commission
QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control
RDBMS	Relational Database Management System
RFI	Radio Frequency Interference
RFI	Request for Information
RFID	Radio Frequency Identification
RFP	Request for Proposal

Acronym	Definition
RMA	Return Materials Authorization
SDDD	System Detail Design Document
SDLC	Software Development Lifecycle
SDP	Software Development Plan
SOW	Scope of Work
SRD	System Requirements Document
SRR	System Requirements Review
TIP	Turnpike Industrial Park
TOC	Toll Operations Center
TSL	Transponder Status List
TTRR	Time to Respond and Repair
UIL	User Identification List
UPS	Uninterruptible Power Supply
VLAN	Virtual Local Area Network
VPC	Violation Processing Center
VPN	Virtual Private Network
WAN	Wide Area Network
WRO	Western Regional Office

Exhibit C
Price Proposal Instructions

Table of Contents

1. GENERAL INSTRUCTIONS

Proposers shall complete their Price Proposals in accordance with the following instructions:

1. The Price Proposal Forms are provided in Excel format worksheets for ease of completion and checking. The Excel version of the Price Proposal shall be downloaded from the Commission's Website at: www.paturnpike.com/procurement.
2. Proposers shall submit their Price Proposals on the Price Proposal Forms included in RFP, Exhibit F - Forms. Price Proposals shall be sealed and submitted separate from the Technical Proposal as further instructed in the RFP. Price Proposals shall be submitted in the quantities and manner identified in the RFP.
3. The Price Proposal Forms shall constitute the full and complete Price Proposal for compensation for performance of the Contractor's obligations and Work under the Cashless Tolling System Project.
4. Proposers must complete the Price Proposal Forms in their entirety. The Price Proposal Forms for the Project are as follows:
    - **Cashless Tolling System Implementation and Maintenance Cost** – Sheet 1
    - **In-lane System Cost** – Sheets 2, 2-1 and 2-2
    - **Toll Host/System Cost** – Sheets 3, 3-1, 3-2 and 3-3
    - **In-lane System Hardware Maintenance and Software Support Services Cost** – Sheets 4, 4-1, 4-2 and 4-3
    - **Toll Host/System Maintenance and Software Support Services Cost** – Sheets 5, 5-1 and 5-2
    - **Future System Implementation and Maintenance Cost** – Sheets 6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 and 6-9
    - **Additional Services Rates** – Sheet 7-1
    - **Payment Schedule** – Exhibit D
5. Proposers should not fill in any grayed-out cells on the Price Proposal Forms, nor shall Proposers make any other entry on or alteration to the Price Proposal Forms other than in accordance with these Price Proposal Instructions.
6. The Commission may waive or correct any error appearing in a Proposer's completed Price Proposal Forms if the correct amount can be clearly ascertained from the information provided; however, the Commission is under no obligation to do so. In the event of an inconsistency between the amount stated in numbers and the amount stated in written words, the amount stated in written words will control. In the event of a mathematical miscalculation, the correct sum will control.
7. An officer of the Proposer or an individual otherwise authorized in writing by an officer of the Proposer must sign and date Sheet 1 in the appropriate place as identified.
8. All elements of the Price Proposal must be completed. If zero quantities are included for a line item in the Proposal, a zero must be entered into the corresponding cell. In addition, all items

identified by the Commission in the Price Proposal Forms will be assumed to be included in the Price Proposal.

9. The Commission reserves the right to reject Price Proposals that are not completed in accordance with the instructions set forth herein.

10. Instructions for completion of each of the Price Proposal Forms are provided in Sections 2 through 12 below.

11. The Price Proposal shall be inclusive of all costs, fees and applicable taxes needed to meet the requirements of the RFP, including the **Exhibit A, Scope of Work**. **All costs should be entered in 2016 dollar values.** No price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.

2. INSTRUCTIONS ON COMPLETING THE PRICE PROPOSAL FORMS

1. There are twenty-six (26) Price Proposal Forms, as detailed above, including six pricing summary sheets (Sheets 1, 2, 3, 4, 5 and 6) and associated back-up information on back-up sheets for each pricing sheet. Back-up sheets for each summary sheet are labeled to identify the corresponding summary pricing sheet; for example, Sheet 2-1 is a back-up sheet to pricing Sheet 2. Back-up sheets are located following summary sheets 1 through 6. The Additional Services Rates Sheet 7-1 is a standalone sheet and does not require a summary sheet.

2. Table 1 summarizes the 26 Price Proposal forms that shall be completed by all Proposers. Each form is located on a unique sheet in an Excel workbook. The table provides the following information for each form:

    a. The sheet number (e.g. 2, 2-1, etc.)

    b. The sheet identifier listed on the tab in Excel

    c. The sheet title listed at the top of each sheet

Table 1 – Price Proposal Form Summary

Sheet Number	Sheet Identifier	Sheet Title
2	Project Summary	Cashless Tolling System Implementation and Maintenance Cost
2-1	Backup In-Lane	Back-up Base and Optional In-lane System Cost Schedule
2-2	Backup In-Lane Staff	Back-up In-lane System – Staff and Position Classifications with Rates
3	Host System Sum	Toll Host/System Cost
3-1	Backup Host System	Back-up Toll Host/System Cost Schedule
3-2	Backup In-Lane-Host-Spares	Back-up In-Lane System and Toll Host/System Spares Cost Year 1
3-3	Host System Staff	Back-up Toll Host/System – Staff and Position Classifications with Rates
4	In-Lane Sys Hdw SW Maint	Base and Optional In-lane System Hardware Maintenance and Software Support Services Cost
4-1	Backup In-Lane System Maint	Back-up Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
4-2	Backup Lane Hdw Maint	Back-up Base and Optional In-lane System Hardware Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
4-3	Backup In-Lane Maint Staff	Back-up Base and Optional In-lane System Hardware Maintenance and Software Support Services – Staff and Position Classifications with Rates
5	Toll Host Sys SW Maint	Base and Optional Toll Host/System Maintenance and Software Support Services Cost
5-1	Backup Host Sys SW Maint	Back-up Base and Optional Toll Host/System Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
5-2	Backup Host Maint Staff	Back-up Base and Optional Toll Host/System Maintenance and Software Support Services – Staff and Position Classifications with Rates
6	Future Pricing	Optional Future Facilities System Implementation and Maintenance Cost
6-1	Future Implement Cost	Back-up Optional Future Pricing Cashless Tolling System Implementation Cost
6-2	Future Impl Zone Detail	Back-up Optional Future Pricing by Zone by Type
6-3	Future Impl Staff	Back-up Optional Future Pricing by Zone and Type – Staff and Position Classifications with Rates
6-4	Future Host Cost	Back-up Optional Incremental Host System Cost
6-5	Future In-lane Maint	Back-up Optional Future In-lane System Hardware Maintenance and Software Support Services
6-6	Future In-lane Detail	Back-up Optional Future In-Lane System Hardware Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
6-7	Future In-lane Staff	Back-up Optional Future In-lane System Hardware Maintenance and Software Support Services – Staff and Position Classifications with Rates
6-8	Future Host Mainten	Back-up Optional Future Toll Host/System Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
6-9	Future Host Maint Staff	Back-up Optional Future Toll Host/System Maintenance and Software Support Services – Staff and Position Classification with Rates
7-1	Additional Services Rates	Additional Services Rates (2016 Values)
Exhibit D		Payment Schedule

3. The Price Proposal Forms are password protected and shall not be unlocked by Proposers. Only the unlocked cells may the Proposers enter data.
4. Blue colored tabs represent summary sheets that do *not* require Proposer input. Green tabs represent worksheets that require Proposer input.
5. On most sheets there are formulas that are automatically calculated based on data entered from elsewhere in the sheet or work book. Font and background colors are used to indicate different types of cells as follows:
    - Black font – Indicates the cell cannot be altered by Proposer.
    - Red font – Indicates the Proposer should enter data.
    - Light red background – Indicates input required. All such cells should be completed accordingly.
    - Light yellow background – Indicates optional input, if Proposers need to provide additional detail.
    - Light green background – Indicates that data has been entered into the cell. Light red and light yellow background will change to light green when any non-zero data is entered. The background for any cells where the Proposer enters zero (0) will not change colors in this manner.
6. While the Commission has made every effort to ensure the Price Proposal Forms contain accurate formulas and calculation, Proposers are required to independently verify that formulas and calculations are being performed correctly.

3. TOTAL PROJECT COSTS

The Proposer's proposed total price shall be the aggregate of all costs included in Sheet 1. Sheet 1 will automatically roll-up and present the totals from Sheets 2 through 6. These costs will be totaled and presented in the Grand Total Cost column in the line entitled Total Implementation and Maintenance Phase with Optional Functionality and Optional Extension Phases.

4. COMPLETION OF IN-LANE SYSTEM COST SUMMARY - SHEETS 2, 2-1 AND 2-2

The Proposer's total price for the In-lane System (roadway) portion of the Implementation Phase shall be the aggregate of all costs included in Sheet 2 which covers all costs associated with the In-lane System portion of the Work for the Southern Beltway/Findlay Connector.

The costs for Sheet 2 shall include (without limitation) all Equipment, supplies, Software, parts and materials, overhead, burden, profit, taxes, duties, fees, Contractor-acquired permits, licenses, warranties, and other items necessary to meet the Contractor contractual requirements associated with the In-Lane portion of the System. No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete the Work except as set forth in Section 12.

The prices on Sheet 2 and related back-up sheets shall not include charges and costs associated with the Host System or the Maintenance Phase. These costs shall be provided on separate Price Proposal Sheets as described below.

To complete Sheets 2 and 2-1 Proposers should do the following:

1. **Sheet 2-1**. In the columns provided under each cost component (Items 1-8) and the Facility Server, enter a description for each price element for each component in as much detail as space allows. Moving to the right in the 2nd column (B) enter the quantity for each item and in the 3rd column (C) enter the unit costs. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 2.

   Complete the cost data for the Optional OCR/ALPR and Enforcement Notification for the Southern Beltway/Findlay Connector by entering a description for each price element for this option in as much detail as space allows. Moving to the right in the 2nd column (B) enter the quantity for each item and in the 3rd column (C) enter the unit costs. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 2.

2. **Sheet 2**. This sheet will be automatically populated from Sheet 2-1. No Proposer input is required.

3. **Sheet 2-2**. Enter specific names for the Key Team positions (Items 1-7) for In-lane System labor costs related to the Implementation Phase. Enter their specific loaded labor rate in the rate column and their number of hours. Moving down the sheet, enter additional labor categories for all labor to be used to complete this Work, including rates and hours. The staff names are not required for these additional positions (i.e. the positions that are not highlighted in red). The total labor dollars will be calculated for each staff person and labor category and a grand total will be calculated. The labor dollar grand total must match the Total with Facility Server on Sheet 2-1. A labor check cell is provided to assist Proposers with verifying that the two (2) labor totals are equal.

5. COMPLETION OF TOLL HOST/SYSTEM COST - SHEETS 3, 3-1, 3-2 AND 3-3

The Proposer's proposed total price for the Toll Host/System portion of the Implementation Phase shall be the aggregate of all costs included in Sheet 3. This sheet covers all costs associated with the Toll Host/System and non-roadway specific costs for the Southern Beltway/Findlay Connector, to complete the implementation, such as project management, engineering and Design, Software, Testing. Additionally, Sheet 3 includes the Warranty Year for the In-lane System Hardware Maintenance and Software Support Services and the Warranty Year for the Toll Host/System Maintenance and Software Support Services which is carried forward from the Maintenance Summary in Sheets 4 and 5 respectively. The cost for these items are included in the Total Toll Host/System Costs in Sheet 3 and although they are

shown as a line item in Sheets 4 and 5 respectively, they are not included in the total in Sheets 4 and 5 for the respective Maintenance category.

The Toll Host/System cost shall include all costs for items identified in line items 1 through 19 of Sheet 3 associated with the Toll Host/System cost component. The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, and other items necessary for the Contractor to complete the Work. The costs shall also include (without limitation) all Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and other items necessary to meet the Contractor contractual requirements associated with the Toll Host/System Cost. No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete this Work except as set forth in Section 12.

With the exception of including the Year 1 warranty Maintenance costs, the prices on Sheet 3 and related back-up shall not include charges and costs associated with the Lane System or Maintenance Phase. These costs shall be set forth on separate Price Proposal Forms as described in Section 2 above and Section 6 and 7 below.

Proposers shall complete Sheets 3, 3-1, 3-2 and 3-3 as follows:

1. **Sheet 3-2.** This sheet includes Spare Parts costs for Year 1 Equipment items. In the columns provided under each cost component (Items 1-8 for In-lane and Items 1-2 for Toll Host), enter the total quantity in the 2nd column (B) for each listed element required during the Warranty Year. If the item is provided as a lump sum, the quantity should be shown as 1. Moving to the right in the 3rd column (C), enter the unit cost for each item. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total quantity and unit cost as described above. Total item costs will be calculated automatically for each item. The Total Spare Cost Warranty Year (Year 1) In-lane System and Toll Host/System will then automatically be calculated and shown in the appropriate line item within item 15 on Sheet 3-1.
2. **Sheet 3-1**. This sheet provides back up for Sheet 3 cost components 1-12 and 16-19. Enter a description for each cost component in as much detail as space allows. If there are costs other than labor costs that are not included or are not already listed, enter such unit quantities and unit costs. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 6th column (F), enter the labor costs associated with each of the price elements. Please note the following regarding Sheet 3-1:
    - Line item 13 (Warranty First Year of Operation – In-lane System Hardware Maintenance and Software Support Services) is automatically populated from Sheet 4, line item 1.
    - Line item 14 (Warranty First Year of Operation – Toll Host/System Maintenance and Software Support Services) is automatically populated from Sheet 5, line item 1.
    - Line item 15 (Spare Parts and Equipment Year 1 – Warranty Year) is automatically populated from Sheet 3-2.

    The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 3.
3. **Sheet 3.** This sheet is automatically populated from Sheet 3-1. No Proposer input is required.

4. **Sheet 3-3.** Enter specific names for the Key Team positions (Items 1-7) for the Toll Host/System labor costs. Enter the specific loaded labor rate for each staff member in the rate columns and their number of hours for Toll Host/System. Moving down the sheet, enter additional labor categories for all labor to be used to complete this Work, including rates and hours. For positions listed beyond item 7, staff names are not required. The total labor dollars will be calculated for each staff person and labor category and a grand total will be calculated. The labor dollar grand total must match the total labor dollars total on Sheet 3-1. A labor check cell is provided on the bottom of Sheet 3-1 to assist Proposers with the verification that the two (2) labor totals are equal.

6. COMPLETION OF IN-LANE SYSTEM HARDWARE MAINTENANCE AND SOFTWARE SUPPORT SERVICES COST (BASE AND OPTIONAL) SHEETS 4, 4-1, 4-2 AND 4-3

The Proposer's proposed total price for the In-lane System Hardware Maintenance and Software Support Services shall be the aggregate of all costs included in Sheet 4. This sheet covers all costs to be paid for by the Commission for the Maintenance of the In-Lane System, including optional Work.

The costs shall include (without limitation) all Contractor management, administrative and support labor costs, as well as all direct costs associated with maintaining the In-Lane system. The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and all other items necessary to meet the Contractor contractual requirements associated with the In-Lane System Maintenance. All labor rates provided are to include overhead, burden and profit ("Loaded Labor Rate"). No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete the Work, except as provided in Section 12.

Proposers shall complete Sheets 4, 4-1, 4-2 and 4-3 as follows:

1. **Sheet 4-2**. For the Base Contract for Maintenance (Years 1–7), as well as for Optional Extension 1 (Years 1-5) and Optional Extension 2 (Years 1-5), each year is identified with a corresponding set of Work elements. Starting in column (B), enter the monthly per-zone cost associated with each price element. (Please note that the monthly labor cost per zone is automatically populated from Sheet 4-3 and therefore requires no input from the Proposer.) Include all other direct, non-labor costs required for each price element. The Total Monthly costs for each year will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 4-1.
2. **Sheet 4-1.** This sheet is automatically populated from Sheet 4-2; it requires no input from the Proposer.
3. **Sheet 4**. This sheet is automatically populated from Sheet 4-1; it requires no input from the Proposer.
4. **Sheet 4-3**, the Proposer shall do the following:
    - Enter specific names for the Key Team positions (Items 1-7) required for the Maintenance Phase.
    - Moving down the sheet, enter the names of additional labor categories for all labor to be used. Staff names are not required for these additional positions.

- Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column.
- For evaluation purposes the Maintenance Year 1 Rate will automatically be populated based on the 2016 Loaded Labor Rate and applying an assumed annual escalation rate. For purposes of the evaluation an estimated Consumer Price Increase (CPI) increase of 3% per year has been used, assuming Maintenance Phase Work will begin in Year 4 of the Contract.
- Next, enter the annual number of hours for each position/classification required for all zones for Year 1 and Year 2. Labor rates for Maintenance Years 2 through 7 and Optional Extension 1 and 2 will then automatically populated using an assumed annual escalation of 3% from the previous year for evaluation purposes. Note that the actual labor price adjustments will be determined as described in Section 12.
- The total labor dollars will be calculated for each staff person and labor category for Years 1 through 7 and each year of the Optional Extensions periods. A grand total will be calculated for each year. The Total Monthly Per Zone Cost for each year will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 4-2.

7. COMPLETION OF TOLL HOST/SYSTEM MAINTENANCE AND SOFTWARE SUPPORT SERVICES COST SHEETS 5, 5-1 AND 5-2

The Proposer's proposed total price for the Toll Host/System Maintenance and Software Support Services shall be the aggregate of all costs included in Sheet 5. This sheet covers all costs to be paid for by the Commission as part of the Maintenance Phase for the Toll Host/System.

The costs shall include (without limitation) all Contractor management, administrative and support labor costs, as well as all direct costs associated with maintaining the Toll Host/System. The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and all other items necessary to meet the Contractor contractual requirements associated with the Toll Host/System Maintenance. All labor rates provided are to include overhead, burden and profit ("Loaded Labor Rate"). No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete the Work, except as provided in Section 12.

Proposers shall complete Sheets 5, 5-1, and 5-2 as follows:

1. Sheet 5-1. For the Base Contract for Maintenance (Years 1–7), as well as for Optional Extension 1 (Years 1-5) and for Optional Extension 2 (Years 1-5), each year is identified with a corresponding set of Work elements. Starting in column (B), enter the monthly per-zone cost associated with each price element. Starting in the 2nd column (B), enter the monthly quantity for each item. In the 3rd column (C) enter the unit cost. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total monthly quantity and unit cost as described above. Include all monthly labor costs and other direct, non-labor costs required for

each price element. The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 5.

2. Sheet 5. This sheet is automatically populated from Sheet 5-1; it requires no input from the Proposer.

3. Sheet 5-2. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) to be used for these Toll Host/System Maintenance and Software Support Services.
   - Moving down the sheet, enter the names of additional labor categories for all labor to be used for these Toll Host/System Maintenance and Software Support Services. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column for the Toll Host/System Maintenance and Software Support Services.
   - For evaluation purposes, the Maintenance Year 1 Rate will automatically be populated from the 2016 Loaded Labor Rate using an escalation of 3% per year and assuming work will begin in Year 4 of the Contract. Labor rates for Maintenance Years 2 through 7 and Optional Extension 1 and 2 will automatically populated using an escalation of 3% from the previous year. An estimated CPI Composite of 3% has been used for evaluation purposes only. The actual price adjustments will be determined as described in Section 12. No price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.
   - For evaluation purposes the Maintenance Year 1 Rate will automatically be populated based on the 2016 Loaded Labor Rate and applying an assumed annual escalation rate. For purposes of the evaluation an estimated Consumer Price Increase (CPI) increase of 3% per year has been used, assuming Maintenance Phase Work will begin in Year 4 of the Contract.
   - Next, enter the annual number of hours for each position/classification required for the Toll Host/System Maintenance and Software Support Services for Year 1 and Year 2. Labor rates for Maintenance Years 2 through 7 and Optional Extension Years 1 and 2 will then automatically populate using an assumed annual escalation of 3% from the previous year for evaluation purposes. Note that the actual labor price adjustments will be determined as described in Section 12.
   - The total labor dollars will be calculated for each staff person and labor category for Years 1 through 7 and each year of the Optional Extensions periods. A grand total will be provided for each year. This labor dollar total must match the total labor dollars for each year on Sheet 5-1. A labor check cell is provided on the right-hand column of Sheet 5-1 to assist Proposers with verifying that the two labor totals are equal.

8. COMPLETION OF OPTIONAL FUTURE FACILITIES SYSTEM IMPLEMENTATION AND MAINTENANCE COST SHEETS 6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 AND 6-9

The Proposer's total price for the Optional Future Facilities System Implementation and Maintenance Cost portion of the Contract shall be the aggregate of all costs included in Sheet 6. This sheet covers all costs to be paid for by the Commission for a common potential scenario of optional future facility (ies) implemented during the term of the Contract for the purposes of evaluation.

The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and all other items necessary to meet the Contractor contractual requirements of the Implementation and Maintenance of any optional facilities

Proposers shall complete Sheets 6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 and 6-9 as follows:

1. Sheet 6-2. In the rows provided under each zone type, enter the quantity for each item in the Quantity per Toll Zone column and enter the unit cost in the Units ($) column. If the item is provided as a lump sum, the quantity should be shown as 1. If additional items are required to be included under each zone type provided by the Proposer, enter each element name using the additional spaces provided under the appropriate zone section. For all additional items entered, the Proposer must also enter the total zone quantity and unit cost as described above. In the rows provided under the headings labeled *Facility Server* and *Optional OCR/ALPR and Enforcement Notification*, enter the quantity for each item in the Quantity per Toll Zone column and enter the unit cost in the Units ($) column. (Note: Proposers may select to provide a lump sum Host Cost for the Optional OCR/ALPR and Enforcement Notification and/or provide pricing for Optional OCR/ALPR and Enforcement Notification – Per Zone Cost depending on their solution offered.) If the item is provided as a lump sum, the quantity should be shown as 1. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total zone quantity and unit cost as described above. After completing these items, move to the 5th column (E) and enter the labor costs associated with each of the price elements. Include all monthly labor costs and other direct, non-labor costs required for each price element. The costs for each price element will automatically be calculated and the summary cost will be shown in the appropriate line item on Sheet 6-1.

2. Sheet 6-3. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) required for the Optional Future Pricing by Zone and Type.
   - Moving down the sheet, enter the names of additional labor categories for all labor to be used for the Optional Future Pricing by Zone and Type. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column for the Optional Future Pricing by Zone and Type.

- Enter the annual number of hours for each position/classification required for each zone type for the Optional Future Pricing by Zone and Type.

The total labor dollars will be calculated for each staff person and labor category for each zone type. The Total Labor Cost for each zone type will automatically be calculated and the summary will be shown in the appropriate line item on Sheet 6-1.

3. **Sheet 6-4**. This sheet contains a corresponding set of components by zone order quantity. Enter the Incremental Host System Cost associated with each of the price elements for a zone with a total order quantity of 1-9 zones, 10-19 zones, 20-29 zones, 30 -39 zones, and 40 or more zones ordered. Include all labor costs and other direct, non-labor costs required for each price element. The costs for each price element will automatically be calculated. A Total Incremental Host Cost will be calculated based on the number of zones ordered in a given year and the summary will be shown in the appropriate line item on Sheet 6-1.

4. **Sheet 6-1**. This sheet is automatically populated from Sheets 6-2 and 6-4. However, in cells B20 – B23, the proposer may provide a volume discount based on zone quantities ordered in a year. A volume discount percentage may be entered for 10–19 zones, 20–29 zones, 30-39 zones, and over 40 zones. The volumes discount will automatically be incorporated into the calculation in row 12 of this sheet.

5. **Sheet 6-6.** For the Base Contract Future Maintenance Costs for Maintenance (Years 1–6), as well as for Optional Extension 1 (Years 1-5) and for Optional Extension 2 (Years 1-5), each year for the Optional Future In-lane System Hardware Maintenance and Software Support Services is grouped and contains a corresponding set of components. In column (B), enter the monthly per zone cost associated with each price element. Include all costs and other direct, non-labor costs required for each price element. (Note that the monthly labor cost per zone is automatically populated from Sheet 6-7 in the appropriate space provided.) The Total Monthly costs by zone for each year will automatically be calculated and the summary will be shown in the appropriate line item on Sheet 6-5.

6. **Sheet 6-5**. This sheet is automatically populated from Sheet 6-6; no Proposer input is required.

7. **Sheet 6-7**. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) required for the Optional Future In-lane System Hardware Maintenance and Software Support Services portion of the Maintenance Phase.

   - Moving down the sheet, enter the names of additional labor categories for all labor to be used for these Optional Future In-lane System Hardware Maintenance and Software Support Services. Staff names are not required for these additional positions.

   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column.

   - NOTE: For evaluation purposes, the Maintenance Year 1 Rate will automatically be populated from the 2016 Loaded Labor Rate using an escalation of 3% per year and assuming Maintenance will begin in Year 5 of the Contract. Labor rates for Maintenance Years 2 through 6 and Optional Extension 1 and 2 will be automatically populated using an escalation of 3% from the previous year. An estimated CPI Composite of 3% has been used for

evaluation purposes only. The actual price adjustments will be determined as described in Section 12. Additionally no price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.

- Enter the annual number of hours for each position/classification required per zone for the Optional Future In-lane System Hardware Maintenance and Software Support Services for Year 1 and Year 2. This worksheet assumes that Year 2 labor hours will remain consistent per zone for the duration of the Optional Future In-lane System Hardware Maintenance and Software Support Services portion of the contract and the Extension periods of the contract.
- The total labor dollars will be calculated for each staff person and labor category for Years 1 through 6 and each year of the Optional Extension periods. A grand total will be calculated per zone for each year. The Total Monthly per Zone Cost for each year will then be calculated and the summary will be shown in the appropriate line item on Sheet 6-6.

8. Sheet 6-8. For the Base Contract for Maintenance (Years 1–6), as well as for Optional Extension 1 (Years 1-5) and for Optional Extension 2 (Years 1-5), each year for the Toll Host/System Maintenance and Software Support Services is grouped and contains a corresponding set of components. Starting in the 2nd column (B), enter the monthly quantity for each item and in the 3rd column (C) enter the unit cost. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total monthly quantity and unit cost as described above. Include all monthly labor costs and other direct, non-labor costs required for each price element. The costs for each price element will be calculated and the summary will be shown in the appropriate line item on Sheet 6.

9. Sheet 6-9. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) required for the Optional Future Toll Host/System Maintenance and Software Support Services portion of the Maintenance Phase.
   - Enter the names of additional labor categories for all labor to be used for these Optional Future Toll Host/System Maintenance and Software Support Services. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column for the Optional Future Toll Host/System Maintenance and Software Support Services.
   - For evaluation purposes the Maintenance Year 1 Rate will automatically be populated from the 2016 Loaded Labor Rate using an escalation of 3% per year and assuming Maintenance will begin in Year 5 of the Contract. Labor rates for Maintenance Years 2 through 6 and Optional Extension 1 and 2 will automatically populated using an escalation of 3% from the previous year. An estimated CPI Composite of 3% has been used for evaluation purposes only. The actual price adjustments will be determined as described in Section 12.

Additionally, no price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.

- Enter the annual number of hours for each position/classification required for the Optional Future Toll Host/System Maintenance and Software Support Services for all years including Optional Extension 1 and 2 for the duration of the Optional Future Toll Host/System Maintenance and Software Support Services portion of the contract and the Extension periods of the contract. Costs by year are available for entry to allow for consideration of volume of toll zones in any given year if a factor for these costs.
- The total labor dollars will be calculated for each staff person and labor category for Years 1 through 6 and each year of the Optional Extensions periods. A grand total will be provided for each year. This labor dollar total must match the total labor dollars for each year on Sheet 6-8. A labor check cell is provided on the right-hand column of Sheet 6-8 to assist Proposers with verifying that the two labor totals are equal.

10. Sheet 6. This sheet is automatically populated from Sheets 6-1, 6-5 and 6-8. No Proposer input is required.

9. COMPLETION OF ADDITIONAL SERVICES RATES - SHEET 7-1

On Sheet 7-1, the Proposer shall provide a listing of staff positions and loaded hourly labor rates for the purpose of providing pricing for future Work not currently included in Exhibit A, Scope of Work. All changes to the Contract involving labor shall use the hourly labor rates in this table. All hourly labor rates shall be stated for the year 2016 and shall be inclusive of burden/overhead and profit. Hourly labor rates shall be adjusted based on changes to the CPI for the previous year beginning with Maintenance Year 2 as described below.

The Proposer shall also provide the current associated Overhead including burden and Profit rates in the cells identified.

10. COMPLETION OF PAYMENT SCHEDULE – EXHIBIT D

The Payment Schedule sheet applies the Implementation Costs to payment milestones and associated percentages shown in RFP Exhibit D Payment Schedule. The sheet takes the total Proposer's Implementation price shown on Sheets 2 and 3 and multiplies it by the percentage associated with each payment milestone. The result is a dollar amount to be paid for each milestone.

11. COMPLETION OF PROJECT SUMMARY - SHEET 1

Sheet 1 will automatically summarize the costs and pricing detailed in Sheets 2 through 6. These costs will be totaled and presented in the line entitled Total Implementation and Maintenance Phase with Optional Functionality and Optional Extension Phases.

To complete Sheet 1, Proposers must do the following:

1. An officer of the Proposer or an individual otherwise authorized in writing by an officer of the Proposer is required to enter the price written out in words for the Grand Total Cost
2. The sheet will need to include a signature and date, along with the authorized officer's name, title, address and phone number.

12. COST ESCALATION

Pricing that is noted above as subject to adjustment shall be adjusted up or down from the Proposal pricing using the following Bureau of Labor Statistics' (BLS) Employment Cost (CPI) indices as applicable:

CPI: CUUR0400SA0 Consumer Price Index - All Urban Consumers; West Urban All Items

NOTE: The above index names and numbers were obtained from the Bureau of Labor Statistics (BLS) and were current as of the date this RFP was written. In the event that the BLS updates an index name or number, the Commission shall consult the BLS web site to determine the new name and number of the index. More information about the index can be found on the U.S. Bureau of Labor's website (see http://www.bls.gov/cpi/).

For the purposes of the price proposal calculations, an assumed rate has been included. Adjustments shall be made to future prices based on actual CPI (Labor) for each applicable year. The basis for calculating the actual CPI to be applied shall be as follows:

1. Annual adjustment to prices shall be made using the anniversary date of start of the Maintenance Phase at which each new Maintenance year begins.
2. In the first applicable year for adjustments (Year 1 of the Maintenance Phase) the reference for the adjustment calculation shall be the 2016 Loaded Labor Rate provided by Proposers.

The assumed CPI index for evaluation purposes has been applied to the following Cost Worksheets ONLY:

1. Sheet 4 (including back-up sheets 4-1, 4-2 and 4-3);
2. Sheet 5 (including back-up sheets 5-1and 5-2);
3. Sheet 6 (including back-up sheets 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 and 6-9);
4. Sheet 7-1

Adjustments shall be made to future prices in the above sheets based on actual CPI (Labor) for each applicable year. The basis for calculating the actual CPI to be applied shall be as follows:

1. Annual adjustment to prices shall be made using the anniversary date of start of the Maintenance Phase at which each new Maintenance year begins.
2. In the first applicable year for adjustments (Year 1 of Maintenance and Software Support Services) the reference period for the adjustment calculation shall be the 2016 Loaded Labor Rate.
3. For the subsequent applicable years of Maintenance and Software Support Services, as well as for Optional Extension 1 (Extension Years 1-5) and for Optional Extension 2 (Extension Years 1-5),

the CPI adjustments shall be applied against the previous reference year. For example, Maintenance and Software Support Services pricing shall be adjusted using the index change from Maintenance Year 1 as a reference point for adjusting each of the pricing elements identified in the above table).

4. The annual adjustment shall be equal to the cumulative change in the applicable index for the latest previous 12 month period available at the time of the anniversary date.
5. The applicable index shall be applied as follows:
    a. CPI shall be applied when the entire component of the cost is direct Contractor labor.

Exhibit D
Payment Schedule

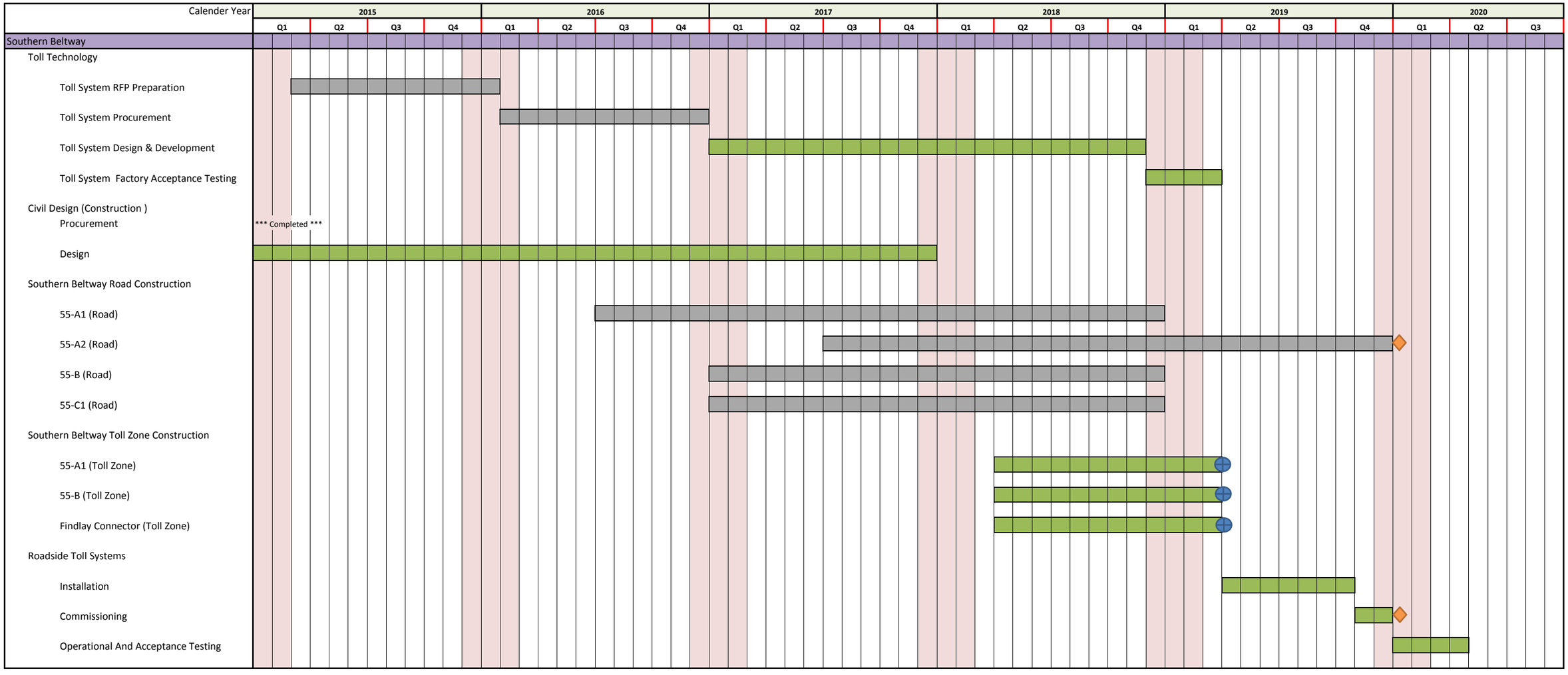
Exhibit D - Payment Schedule

A. Payments for Implementation Cashless Tolling System Design and Development					$ -
Payment Number	**Payment Milestone**	**Pay Items**	**% Paid**	**Cum.% Paid**	
A-1	Notice to Proceed	Notice to Proceed.	5.00%	5.00%	$ -
A-2	Cashless Toll System Development and Administration	Project Management Documents Approved (PMP, Project Schedule, QA Plan and SDP, SRD).	10.00%	15.00%	$ -
A-3	Cashless Toll System Design	Business Rules and Design Documents Approved (BRD and SDDD) .	15.00%	30.00%	$ -
A-4	Cashless Toll System Factory Acceptance Testing (FAT)	Test Documentation and Factory Acceptance Testing Approved	15.00%	45.00%	$ -
A-5	Cashless Toll System Onsite First Installation Testing (OFIT)	Installation Plan Approved, Test Documentation and Onsite Integration Testing Approved - First Site.	10.00%	55.00%	$ -
A-6	Cashless Toll System Manuals and Training	Manuals Approved and Training Approved.	5.00%	60.00%	$ -
A-7	Cashless Toll System Commissioning	Installation and Commissioning Approved Ready for Go Live.	15.00%	75.00%	$ -
A-8	Cashless Toll System Acceptance	Operational and Acceptance Test Approved, As-builts Approved and Implementation Phase Closed Out.	25.00%	100.00%	$ -

B. Payments Related to Hardware, Equipment and Off-the-Shelf Software				$ -
Payment Number	**Payment Milestone**	**% Paid**	**Cum.% Paid**	
B-1	Ordering Verified Southern Beltway.	20.00%	20.00%	$ -
B-2	Purchased, Received and Verified Southern Beltway.	60.00%	80.00%	$ -
B-3	Installation Approved Southern Beltway.	20.00%	**100.00%**	$ -

Exhibit E
Project Implementation Schedule

Southern Beltway Cashless Tolling Implementation Schedule (DRAFT*)



* Final Implementation schedule to be developed by the Contractor with Approval from the Commission.

Sites Available to Vendor for installation and testing
Projected Go-Live
Winter Months that may impact Construction

Exhibit F
Forms

Exhibit F-1
Proposal Cover Sheet

EXHIBIT F-1 – PROPOSAL COVER SHEET
Pennsylvania Turnpike Commission
Cashless Tolling System Implementation and Maintenance

RFP# 16-10495-7252

Enclosed in three separately sealed submittals is the proposal for the Proposer identified below for the above referenced RFP:

Proposer Information:	
Proposer Name	
Proposer Mailing Address	
Proposer Website	
Proposer Contact Person/Title	
Contact Person's Phone Number	
Contact Person's Fax Number	
Contact Person's Email Address	
Proposer Federal ID Number	
Location of Headquarters	
Location of Office(s) Performing the Work	
Listing of all Pennsylvania Offices and Total Number of Pennsylvania Employees	

Submittals Enclosed and Separately Sealed:

☐ Technical Submittal ☐ Diverse Business Participation Submittal ☐ Cost Submittal	
Signature	
Signature of an official authorized to bind the Proposer to the provisions contained in the Proposer's proposal:	_____
Print Name	
Title	

FAILURE TO COMPLETE, SIGN AND RETURN THIS FORM WITH THE PROPOSAL MAY RESULT IN THE REJECTION OF THE PROPOSAL.

Exhibit F-2
List of Subcontractors

Please duplicate this page as necessary to provide the requested information.

	SUBCONTRACTOR	SUBCONTRACTOR	SUBCONTRACTOR
Legal Name of Company			
Company's FEID Number			
Company Contact Name			
Company Address			
City, State, Zip Code			
Company Telephone No.			
Company Fax Number			
Company E-mail address			
Legal Name of Principal(s)			
Address of Principal(s)			
City, State, Zip Code			
Telephone No. of Principal(s)			
Fax Number of Principal(s)			
E-mail address of Principal(s)			
Corporate Number (if applicable)			
License Number (if applicable)			
Status of License (if applicable)			
Work to be Performed			
Expected Percentage of Total Work			

Exhibit F-3
Recent Client List

#	Name of Client including address and telephone #	Project Name	Project Description	Start Date	End Date	Contract Amount
001						
002						

Exhibit F-4
Reference Forms Part 1

Proposer shall use this attachment to clearly demonstrate how Proposer meets the minimum qualification requirements for Proposals with regard to Proposer project experience. Each reference provided may be contacted by the Commission. Copy this form as needed to comply with the requirements outlined in the RFP for the Implementation and Maintenance Phase minimum requirements.

Proposer's Name: _____

Please check off which qualifications requirement this reference is intended to address (you may check more than one box to cover both Implementation and Maintenance requirements as long as the explanation below is sufficiently detailed to cover both).

☐ Implementation ☐ Maintenance

Reference Company/Agency Name:		
Address:		
City:	State:	Zip Code:
Phone Number:	Fax Number:	
Project Manager Reference:		
E-mail:		

Alternate Reference*:	
Phone Number:	Fax Number:
E-mail:	
Alternate Reference Role on Reference Project:	
***Must be completed in addition to the Project Manager reference**	

Proposer's role on project and years of participation (mm/dd/yy to mm/dd/yy):

Project location, scope, cost, start / end dates:
Operational functionality, number of lanes / plazas, revenue collected, etc.:
Relevant equipment and systems used (such as Host, Cashless Tolling, and OCR etc.):
Comparison to Commission requirements:
Installed System and Maintenance documented performance, as applicable:
Key Personnel involved and role who are also proposed on PTC project:

Exhibit F-5
Reference Forms Part 2

Proposer shall use this form for Key Team member references. Each reference provided may be contacted to determine the Proposer's ability to meet the Proposal requirements. Copy this form as needed to comply with the requirements of the RFP and the number of references cited.

Key Project Team Member _____

Proposed Position _____

Reference Company Name:	
Address:	
City:	State: Zip Code:
Phone Number:	Fax Number:
Project Manager:	
E-mail:	
Number of total years' experience of Key Personnel team member in similar role to one proposed for the Commission:	
Reference Project:	
Key Personnel team member role on reference project, including dates of participation and job description:	
Description of reference project location, scope, cost, start / end dates, etc.:	
Operational functionality, number of lanes, plazas, revenue collected, etc.:	
Relevant systems used (Host, Cashless Tolling, and OCR etc.):	
Key Personnel team member's major contributions and highlights:	

Exhibit F-6
Requirements Conformance Matrix

Attachment F-6: Instructions for Completing Requirements Conformance Matrix

1) The Proposer must complete and submit the Excel version of the Requirements Matrix which is provided in PDF form in Attachment F-6: Requirements Conformance Matrix. The Excel version of the Workbook shall be downloaded from the Commission's Website at: www.paturnpike.com/procurement.

2) The Matrix cover each of the requirements set forth in Exhibit A, Scope of Work.

3) Proposers shall not alter the requirements listed in the Requirements Matrix in any way and must use the workbooks provided. The Proposer shall submit a PDF version of the completed Matrix in Technical Proposal Section 6, in addition to submitting the Excel version of the Matrix on CD/DVD, as directed in Section 2.2.2 Proposal Format and Content Instructions.

4) The following are instructions for completion of the Requirements Conformance Matrix:

a) There are four columns in the - Requirements Conformance Matrix as follows:

i. No. (Column A): A sequential number that matches the requirement number in the Requirements.

ii. Requirements (Column B): A description of each requirement.

iii. Status of Functionality (Column C): Proposer must select one of the five (5) response codes for each Requirement and enter it in this column as further detailed in item "b)" below.

iv. Comments (Column D): This field must be completed if the Status of Functionality code is entered as "N = will not be provided" for the particular requirement in order to explain why the Proposer is not complying with this Requirement.

b) Proposers must complete the Status of Functionality (Column C) in the following manner:

i. Existing = E: Enter an "E" in this column if the requirement described is already met by the current system, no modification required.

ii. Modification = M: Enter an "M" in this column if the functionality exists and is provided in the proposed System but needs to be modified to meet the requirement.

iii. Replaced = R: Enter a "R" if the function is available within the current system, but will be replaced to meet PTC needs.

iv. To Be Developed = D: Enter a "D" if the function is not in the current system, but will be developed.

v. Not Provided = N: Enter an "N" if the Proposer will not provide the functionality and will not meet the requirement as part of its Proposal. If any row in the Status column is completed as "N" then Proposer must provide an explanation in the Comments (column D) in the corresponding row. The comment field may reference information that is included elsewhere in the proposal.

Functional Requirements			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
II	Cashless Tolling System Installation Requirements		
2.1	In-lane Systems Functional Requirements		
	This section defines the In-lane requirements of the Contractor Scope of Work. Each Segment of the Highway has a tolling point which could have one or two toll zones and tolls are collected in each direction of travel at the toll zones. At the toll zones identified, the Cashless Tolling Equipment and electronics shall be installed on toll gantries and in the toll equipment building provided by the civil contractor. The types of toll gantry conceptual details at each of the toll zones are provided in *Attachment 5: Concept Plan for Overhead Structures/Toll Gantries.* The Contractor shall work with the Commission, the civil designer and civil contractor on requirements for all civil design and construction work to be performed by others on the Project, including the design and location of equipment mounting locations and retractable mounting arm(s).		
2.1.1	Cashless Tolling System Hardware		
2.1.1.1	General Requirements		
1	All Hardware and Equipment supplied under this Contract, including consumable material (material that requires periodic replacement/replenishment), shall be new and certified to have a ten (10) year minimum service life. Materials and products that have been previously used for development work or the Contrator's internal testing, or items that have been salvaged or rebuilt shall not be permitted to be used in connection with this Contract.		
2	All components, supplies and materials furnished under this Contract for the Cashless Tolling System shall be new, Commercial Off-the-Shelf (COTS) and to the extent possible, field proven, and in revenue operations to the extent possible.		
3	All components procured, furnished, and installed by the Contrator shall be available through multiple sources identified by the Contrator to the extent possible and the names of such sources shall be readily available to the Commission. The Commission shall have the right to purchase third-party Equipment directly from the Equipment vendor.		
4	All Hardware and Software provided under this Contract shall be supported by their manufacturer, upgradeable, maintained, updated, patched and secured throughout the term of the Contract.		
5	Proof of purchase in the form of purchase orders, dated invoices and shipping bills shall be retained by the Contrator and furnished to the Commission in accordance with the requirements of this Scope of Work and Contract.		
6	All Commission standards in accordance with the requirements of this Scope of Work shall be maintained throughout the term of the contract. Standards include but are not limited to, IT security, data retention, Software and Database design and development, installation, change management, testing, maintenance and protection of traffic (MPT) and safety.		
2.1.1.2	FCC License		
7	The AVI system shall comply with all applicable Federal Communications Commission (FCC) regulations.		
8	It is the Contrator's responsibility to prepare the required application and the Commission will obtain the required FCC licenses for all AVI equipment provided under this Scope of Work and Agreement. The Commission has the FCC licenses for the existing AVI systems.		
9	The Contrator shall, as part of this effort, identify and accommodate any site conditions that may potentially degrade the performance of the AVI system.		
10	Under all circumstances it is the Contrator's responsibility to comply with the AVI performance requirements of this Scope of Work and Agreement and no relief in such performance shall be provided.		
2.1.1.3	Maintainability		
11	The Cashless Tolling System Hardware shall be designed with the following specifications:		
	· modular, replaceable and repairable components to allow for efficient Maintenance;		
	· all replacements shall be plug compatible with no changes required;		
	· all components that perform the same function shall be interchangeable;		
	· all zone controllers shall be designed such that they are identical and can be configured to operate the specific number of lanes at each toll zone as shown in Attachment 1: Cashless Toll Zone Locations through the addition of Hardware pluggable modules and setting of appropriate Software parameters;		
	· where possible, there shall be a second source for all parts and components and it shall be identified in the Bill of Materials (BOM) unless otherwise Approved by the Commission;		
	· all electronic components shall be installed in equipment racks and installed inside the toll equipment building at each toll zone/toll point as applicable;		
	· zone controllers shall be expandable at a minimum to add two (2)additional in-lane devices;		
	· Contrator's electronic Design and installation shall prevent electrical disturbances and noise in the electronics;		
	· ISO standard I/O interface modules shall be used in the Design and all serial, discrete and network interface boards shall have at minimum two (2) spare slots to support the addition of components;		
	· all exposed junction boxes, pull boxes and other Hardware shall be either zinc coated and epoxy painted or stainless steel;		

Functional Requirements			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
	· all field wiring shall be terminated on screw lugs or connectors and all connectors shall be keyed or polarized to prevent incorrect connections;		
	· all wiring and connectors shall be labeled and strain relief shall be provided to protect the conductors;		
	· surge suppression shall be provided for all field wiring susceptible to lightning or similar surges;		
	· all lane Equipment shall be fused and protected against over current, over voltage, under voltage and lightning;		
	· redundant power supplies shall be provided for all required internal DC voltages, and		
	· all Equipment shall be properly grounded to ensure the safety of Maintenance personnel.		
2.1.1.4	**Diagnostics**		
12	Equipment mounting and installation design shall support the maintenance of Equipment from above and from below on toll gantries as applicable to each cashless toll zone.		
13	Maintenance personnel shall have easy access to major subsystem components, and removal, testing, and replacement shall not require tools. Components mounted on overhead structures shall also be capable of tethering to secure points during removal or placement during replacement activities such that items cannot be dropped. All test points necessary to diagnose the Equipment while in operation shall be easily accessible and light emitting diode (LED) indicators shall be provided to assist technicians to identify and diagnose problems.		
14	Technicians shall have the ability to connect a laptop authorized by the Commission in accordance with Commission policies to troubleshoot the components. Technicians shall have secured remote access to the device to monitor its status and to perform diagnostics when the lane is in operation.		
15	For easy diagnostic and trouble shooting, all error and event logs shall be consolidated such that all events and errors associated to a transaction are in a single log. The consolidated error and event logs shall be retained online for a configurable period of time and shall be easily accessible to the technicians.		
16	The consolidated error and event logs shall also be transmitted to the MOMS and available to Authorized Users in viewable form. Search and filter capability shall be provided to display and review data in the consolidated log.		
17	All diagnostics performed shall be recorded and automatically reported to the MOMS, including the technician ID, the time the Maintenance was performed, and all status and recovery messages.		
18	All diagnostic Software and specialty tools required for support of Maintenance activities shall be supplied by the Contrator and the Commission shall have full rights and access as further defined in the Contract. All Software and operating systems shall meet the Commission's most current technology standards; all such Software and equipment shall meet Commission IT security standards.		
2.1.1.5	**Customized Hardware**		
19	If customized components or controllers are used, the Contrator shall provide detailed documentation on the Design, production and testing of these units and shall provide usage rights to the Commission. Documentation shall include electronic diagrams, component layouts and the detailed Bill of Material listing manufacturers/vendors. The Contrator shall identify all customized components and controllers and indicate their plan to make them available for the term of the Contract, including the option for placing in escrow.		
2.1.1.6	**Equipment Racks**		
20	All in-lane Equipment controllers and Cashless Tolling System electronics, devices, servers and associated communications Equipment shall be installed inside dedicated toll equipment racks that are housed within the toll equipment building according to a layout Approved by the Commission IT Department. The Contrator shall purchase and install the equipment racks in accordance with the requirements of this section.		
21	It is the Contrator's responsibility to provide the equipment racks of the correct size that meets the requirements of this Scope of Work. Equipment racks shall have adequate space (twenty five {25} percent extra) for added boards, servers and components for future expansion.		
22	The equipment racks shall support the Cashless Tolling System components for a minimum of ten (10) years. The equipment racks shall not be used to support peripheral non-toll related equipment.		
2.1.1.7	**Environmental**		
23	The Cashless Tolling System Equipment to be supplied will be installed in areas exposed to the range of climatic conditions found in Pennsylvania. In addition to the climatic conditions, the Equipment will also be subjected to harsh environmental factors normally found in the operation of a toll lane, such as, but not limited to: car, truck, and bus emissions; deicing materials, industrial exhausts; industrial cleaners; gasoline and car lubricants; Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI), and vibrations. These conditions shall be taken into account in the Design and selection of Equipment used on this Project and the Contrator shall ensure that the System works accurately and reliably in such environment.		
24	Lane electronics, zone controllers, LPICPS controllers/servers and other components shall be able to operate in the sealed and enclosed environment of the equipment racks installed within the toll equipment building.		
25	All Hardware provided under this Contract shall be corrosion resistant and remain corrosion resistant for the term of the Contract.		

Functional Requirements			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
26	The in-lane Equipment not in environmentally controlled conditions shall operate with no degradation of performance in ambient air temperature of negative thirty (-30) to seventy (70) degrees Celsius, with and without direct sunlight, and relative humidity of five (5) to one hundred (100) percent for Equipment installed in an outside environment and five (5) to ninety-five (95) percent non-condensing for Equipment installed inside equipment racks.		
27	During the Design phase, the Contrator shall provide specification sheets that prove the zone controller and other lane electronics meet the environmental specifications given above. Results of all environmental tests conducted and certification of compliance shall be provided to the Commission for Approval.		
28	All exposed or in-lane Equipment, when in its fully assembled configuration, shall not be damaged, nor shall operational performance or expected lifetime be degraded. During Design phase, the Contrator shall provide specifications for the in-lane Equipment for Commission Approval.		
2.1.1.8	**Assembly**		
29	All customized Hardware shall be assembled and tested in the Contrator's fabricatioNAssembly facilities before being installed in the lane in accordance with the Commission's Approved test plan for customized Hardware. All chassis, attachments, and Hardware shall be fabricated stainless steel, hot dipped galvanized or other materials resistant to salt exposure and corrosion.		
30	All customized Hardware shall be identified and shall undergo a seventy-two (72) hour burn-in test before they are installed in the lanes, in accordance with the Commission's Approved test plan.		
31	Customized Hardware assembly shall facilitate replacement of failed components in accordance with requirements of this Scope of Work.		
2.1.1.9	**Bill of Materials**		
32	The Contrator shall include the BOM for all Equipment and Hardware supplied for the Cashless Tolling System. Each component shall also include the second manufacturer source and any exceptions shall be noted and explained. During the Design phase the BOM shall be finalized and all changes shall be subject to the approval of the Commission.		
33	Prior to purchase of any Equipment and as part of its Design the Contrator shall submit the final BOM to the Commission for Approval. No equipment shall be purchased by the Contrator prior to Approval of the BOM and the Design, unless otherwise authorized in writing by the Commission.		
34	All Hardware and Software procured under this Scope of Work shall be confirmed to be the latest model/version at the time of purchase with the required warranty, security, Maintenance and support Services.		
35	Updates to the BOM shall be provided by the Contrator whenever changes occur and at a minimum on a semi-annual basis over the term of this Contract.		
2.1.10	**Spare Parts and Support**		
36	The Cashless Tolling System procured, furnished, and installed under this Contract shall allow the Contrator to Maintain and replace parts for the term of the Contract. The Contrator shall provide a spare parts list the cost to the Commission (inclusive of shipping) and recommended quantities for all Hardware supplied for the Cashless Tolling System for each year of the Contract.		
37	This Contract shall include the initial purchase quantities of spare parts required for the operation of the tolling points during the Warranty period as recommended by the Contrator. Costs for the replacement of spare parts during the Warranty period shall be the responsibility of the Contrator.		
38	At the end of the Maintenance term, all spare parts inventory shall be turned over to the Commission at one hundred (100) percent of the required inventory level. The Contrator shall identify (via the MOMS) the warranty status for each piece of Hardware and warranty period remaining, if applicable.		
2.1.2	**Cashless Tolling System Software**		
39	The operating system, database, other third-party Software, and Cashless Tolling System Software procured, furnished, and installed by the Contrator shall support real time operations of the lane and shall be field proven.		
40	The operating systems shall have a future upgrade path and shall be supported for a minimum of ten (10) years. The Contrator shall ensure that the risk of obsolescence to the Hardware is minimized through the selection of the operating system Software and the peripheral Hardware.		
41	All Cashless Tolling System Software developed, furnished, and installed under this Contract shall be warrantied against Software defects, security vulnerabilities and deficiencies for the term of the Contract and as described within the Contract and associated attachments.		
42	The vendor shall have an annual information security risk assessment and a vulnerability scan performed by a third party, in consultation with Commission IT Security, and provide the results to the Commission.		
2.1.3	**Cashless Tolling System Lane Configurations**		
43	The Cashless Tolling System shall support the toll zone types, lane configurations and dimensions detailed in Attachment 1: Cashless Toll Zone Locations.		

Functional Requirements			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
44	Travel lane widths shall be assumed to be standard twelve (12) feet in all lanes. Shoulders widths for each toll zone are detailed in Attachment 1: Cashless Toll Zone Locations. Shoulder lanes that are eight (8) feet or greater shall be fully equipped as a travel lane. Shoulder lanes that are less than eight (8) feet shall have vehicle detection and image capture Equipment to detect and capture vehicles straddling the shoulder.		
45	During the detailed Design, the Contrator shall make the required adjustments to the System Design to accommodate for variations in the actual lane widths.		
2.1.4	**Toll System Requirements**		
2.1.4.1	**Toll System Software Security**		
46	Access to information on the Cashless Tolling System and network shall be password controlled. The access shall be role based and limited to the authorized Contrator staff and designated Commission personnel.		
47	Accounts for user access to the System shall require a strong password and be compliant with Commission IT security standards and requirements.		
48	User access security, including sign-on facilities, permission control and access privileges for different levels shall be provided for the files, directories and application Software and shall be fully configurable by a system administrator. Access to all systems needs to be controlled through a central repository with each user having an unique log-in.		
49	User sign-on, access and access failures, both local and remote, to any element of the Cashless Tolling System shall be recorded and tracked for security audit proposes and reported to the MOMS. The System shall continuously and automatically monitor for unauthorized access; violations shall be reported to the MOMS as priority 1 Alert. These reports should be provided to Commission IT Security within twelve (12) hours of discovery.		
50	The Contrator shall develop the access levels, user roles and privileges matrix during System Design with the Commission input, including review by Commission IT Security, and Approval. The System shall allow for addition and changes to the access levels, user roles and the addition of personnel in a secure manner.		
51	A system level account shall be provided for Commission security systems to perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool. Additionally, Commission IT Security can request the Contrator to perform any scans and ensuing reports through the term of the Contract.		
52	The Contrator shall not circumvent the Commission Approved System security. All access to the System and Approved changes made shall be recorded, monitored, reviewed and audited by the Commission. Specific requirements shall be developed by the Contrator during System Design.		
53	Authorized Users shall have access to the zone controller user access logs to audit the system access.		
2.1.5	**Cashless Tolling In-Lane System**		
2.1.5.1	**Automatic Vehicle Identification (AVI) System**		
54	The Contrator shall provide an AVI system that is compliant with the E-ZPass Group interoperability requirements at the tolling points specified in this Scope of Work.		
55	The Commission will procure the antennas and the readers as specified by the Contrator through a certified E-ZPass Group vendor. The Contrator shall take delivery of the equipment and the Contrator shall be responsible for the AVI equipment installation and maintenance upon delivery.		
56	The Contrator shall furnish and install all other Hardware, cabling and associated mounting fixtures to form a fully functioning AVI system that meets the requirements of this Scope of Work.		
57	The Contrator shall be responsible for the physical tuning of the certified AVI Equipment, and integrating the AVI system into the Contrator in-lane Design. In addition, the AVI vendor shall certify that the lanes are tuned to the Approved AVI specifications. All AVI installation, configuration and tuning shall be in compliance with the certified E-ZPass Group vendor requirements.		
58	The Contrator is responsible for synchronizing all AVI readers that are in close proximity to the tolling points as required by the certified AVI manufacturer.		
59	The AVI system shall provide full coverage in all areas of the toll zone to read and report transponders. Transponders on vehicles straddling the shoulders that are less than eight (8) feet shall be read and reported to the zone controller. The Contrator shall support adjustments to the antenna quantity and placement based on the final shoulder configuration.		
60	The Contrator shall maximize any inherent redundancy built into the AVI readers whereby the failure of the master or primary reader will result in the reporting of the transponder reads via the slave or secondary reader.		
61	The AVI system shall be able to read the transponder, write to the transponder and report all E-ZPass Group interoperable transponders on vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane, traversing lanes and straddling lanes with no interference or degradation of performance. Non-E-ZPass Group interoperable transponder reads shall also be reported and flagged if the AVI system is capable of reading such transponders.		
62	The AVI system shall have the ability to process transponders mounted on vehicles traveling in stop and go and bumper-to-bumper traffic and vehicles traveling at speeds of up to one hundred (100) miles per hour.		

Functional Requirements			
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63	The read zones in the lanes at a toll zone shall be tuned such that transponders in vehicles traveling through the lanes in the opposite direction of travel are not reported by the AVI system.		
64	The AVI system shall buffer transponder reads when it is unable to communicate to the zone controller. When communications are restored, the Buffered Transponder Reads shall be reported to the zone controller.		
65	If more than one transponder is present in a vehicle, the AVI system shall have the ability to accurately read, write to and report multiple transponders that are compliant with the E-ZPass Group and future National Interoperability (NIOP) requirements. The zone controller shall properly associate the first read Commission transponder that has a valid status at the time of the transaction to the vehicle and report the additional transponders in the transaction. If both transponders have a valid status the zone controller shall associate the first read to the vehicle and report any additional transponders in the transaction. Additional transponder reads transmitted to the Cashless Toll Host System shall be reported to the existing CSC/VPC system according to the Business Rules.		
66	The Contrator shall use the full capability of the selected AVI system to obtain AVI system status in accordance with the manufacturer specifications and report such status to the MOMS. Loss of communication to any element of the AVI system shall be immediately detected by the zone controller and reported to the MOMS. The Contrator-provided monitoring logic shall specifically detect any failures and generate alarms when failures are detected.		
67	The Contrator shall provide maintenance tools to support remote lane tuning, diagnostics and other configuration changes. Setup and configuration of the AVI system shall be achieved remotely and shall not require lane closure except for major lane tuning, when initially installed or when a reader or antenna is replaced.		
2.1.5.2	**Automatic Vehicle Classification (AVC) System**		
68	The Contrator shall analyze the site conditions and Design, procure, furnish and install the required sensors and Hardware on all lanes at the specified Cashless Toll Zones as part of the AVC system that performs in accordance with performance requirements set forth in this Scope of Work under all weather conditions. The AVC system shall accurately detect, classify and separate vehicles spaced as close as three (3) feet apart traveling in stop and go and bumper-to-bumper traffic and vehicles traveling at speeds up to one hundred 100 miles per hour.		
69	The AVC system shall determine vehicle axle count or axle count and vehicle dimensions, and classify vehicles in accordance with the Commission vehicle classification structure described in Attachment 4a: PTC Proposed AVC Class Structure and Silhouette based on the type of toll location. Classification of vehicles traveling on the shoulders of less than eight (8) feet width is not required; however, the System shall detect vehicles that travel on the shoulder and trigger the LPICPS.		
70	The AVC system shall have the ability to detect trailer hitches and ensure that vehicles with a trailer in tow are reported as one unit to the zone controller as part of the vehicle transaction data.		
71	The AVC system shall determine the speed of the vehicle and report the speed to the zone controller as part of the vehicle transaction data.		
72	The Contrator shall ensure that there is sensor coverage at all areas of the toll zone to accurately detect and report vehicles traveling the shoulder and vehicles straddling lanes.		
73	The AVC system shall provide vehicle event messages and signals, and vehicle classification data to the zone controller. Exception conditions processed by the AVC system shall be included in the transaction data, for example vehicle straddling the lane.		
74	The Contrator's proposed AVC system shall have redundancy whereby AVC continues to function in the event any element of the AVC system fails or is degraded. The failure of a single sensor shall not prevent the lanes from processing vehicles or impact the System's capability to accurately associate transponders and to capture and process images.		
75	The AVC system shall report its health to the zone controller and shall provide status when polled. Loss of communication to any element of the AVC system shall be immediately detected and reported. All health and failure status messages shall be transmitted and reported to the MOMS. In the event the primary AVC sensor fails, then the secondary sensors shall be used to capture and process images in accordance with the Commission Business Rules.		
76	In the event there is a Class Mismatch between the AVC system and the transponder class, as defined by the Commission Business Rules during the Design phase, an image of the vehicle shall be captured and processed. The ability to enable or disable image capture for a Class Mismatch shall be configurable.		
2.1.5.3	**License Plate Image Capture and Processing System (LCICPS)**		
77	The Contrator shall Design, procure, furnish, and install all necessary front and rear LPICPS Hardware and Software required to support the video tolling and video processing requirements as set forth in this Scope of Work.		
78	High resolution front and rear cameras shall be utilized for performing the OCR/ALPR.		
79	Contrator shall install high resolution front and rear color ALPR cameras to meet the requirements of the Scope of Work. The Contrator shall install high resolution front and rear color cameras to provide one hundred (100) percent image capture during individual camera failures and excessive glare conditions.		
80	The LPICPS shall capture and process vehicles traveling in stop and go and "bumper-to-bumper" traffic, vehicles traveling at speeds up to one hundred (100) miles per hour, and vehicles with separation as close as three (3) feet apart.		

Functional Requirements			
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81	The Contrator shall ensure that there is shoulder coverage and vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane, traversing lanes and straddling lanes, shall be accurately detected and their images captured and processed in accordance with the Commission Business Rules.		
82	The LPICPS shall buffer images (retaining an image until its disposition is known) such that no image is lost in order to support multiple vehicles in the lane and in accordance with the Commission Business Rules.		
83	The Contrator shall procure, furnish, and install cameras, lighting, necessary image triggers, backup triggers and the necessary camera control Software to automatically adjust the cameras to accommodate varying light and weather conditions to maintain adequate brightness and contrast settings, with or without traffic, to ensure optimum license plate information capture under all conditions and time of day.		
84	The system shall associate all images captured for a single vehicle to the vehicle transaction including multiple images captured by a camera.		
85	Lights installed in support of the cameras shall not distract motorists traveling in either direction in the lanes. Contrator shall make no assumption of ambient light and the system shall function without any degradation regardless of the ambient light.		
86	The Contrator shall procure, furnish, and install the necessary redundant controllers/servers to support the in-lane LPICPS Equipment and such servers shall be separate of the zone controller servers.		
87	The Contrator shall provide robust industrialized computers and operating systems (PC's or workstation-type operating systems are not permitted) sufficient processor speed and memory to process vehicles in real time to meet the speed and traffic volumes as specified in this Scope of Work.		
88	The LPICPS controllers/servers shall support standalone operations and be sized to store a minimum of thirty (30) days of images and data per lane at each of the toll zones under normal operating conditions.		
89	The LPICPS shall perform with no degradation under conditions where every vehicle is considered a video transaction (100 percent video transaction). Under these conditions the System shall store images at the lane level for minimum of seven (7) consecutive days per lane. The System shall provide a configurable setting for the processing of one hundred percent (100) percent of video transactions.		
90	When the storage utilization on the LPICPS controllers/servers reaches a configurable percentage (for example 80 percent), a message shall be transmitted to the MOMS. Images shall be deleted only after it is confirmed/acknowledged that the images have been successfully transmitted to the image server(s). Any deletion of images shall be automatic, without user intervention, and shall generate a message to be transmitted to the MOMS (configurable).		
91	The LPICPS controllers/servers architecture shall have full redundancy such that failure of a processor, board, power supply, disk, communications or other critical component does not result in loss of images and data.		
92	In the event communications to the LPICPS are lost or any LPICPS Hardware becomes non-operational, the Contrator's Design shall ensure that no images and/or data are lost and that all images and associated data are saved to a backup controller/server and transmitted to the image server(s) upon restoration of communications.		
93	The Contrator's Design shall guarantee transmission of the video transactions, images and license plate results (optional) from the lanes to the image server(s) and from the image server(s) to the existing CSC/VPC system.		
94	The System shall provide the capability to reconcile images to the transaction data and verify one hundred (100) percent transmission of video transactions and images to the existing CSC/VPC system.		
95	If the Contrator solution includes toll rate determination within the In-lane Systems, then the video transactions may have the toll rates assigned to each transaction as specified in the Approved interface control document (ICD).		
96	The Contrator's architecture shall support the image throughput requirements specified in the Scope of Work.		
97	The LPICPS shall be capable of continuously performing diagnostics and reporting its health to the zone controller and the MOMS. Loss of communication to any element of the LPICPS shall be immediately detected. All health, failure and recovery status messages shall be transmitted and reported to the MOMS.		
98	The LPICPS shall be capable of transferring video transaction data, images and license plate data to the image server(s) or the existing CSC/VPC systems in real-time or in batch mode as determined by the Commission to efficiently utilize the limited network bandwidth.		
99	Software tools shall be provided that allow Authorized Users to verify the image quality in real-time and adjust and tune the images remotely.		
2.15.4	**Optical Character Recognition (OCR)/Automatic License Plate Recognition (ALPR) – Optional**		
	If the option to provide OCR/ALPR Software is exercised, then the Contrator shall provide OCR/ALPR Software for determining the license plate data (number, jurisdiction and plate type) that results in the System meeting the requirements specified in the Scope of Work.		
100	The OCR/ALPR Software may reside at the toll zone level, plaza level or the Highway level, as long as it meets the performance and functional requirements specified in this Scope of Work.		
101	The System shall correctly identify the jurisdiction, plate type, special characters and stacked characters, and accurately determine the license plate number.		

Functional Requirements			
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102	There shall be no backlog or failure in the processing of images for obtaining the license plate data (number, jurisdiction and plate type) and there shall be server redundancy whereby standby servers are available immediately and fully operational in the event of a failure.		
103	The OCR/ALPR Software procured, furnished, and installed under this Contract can include Software that enhances and improves the accuracy and efficiency of the OCR/ALPR process. The System shall meet the OCR/ALPR performance requirements specified in this Scope of Work for license plates from States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA.		
104	The LPICPS shall provide the capability of detecting image quality degradation in near real-time and generate alarms that are reported to MOMS when image quality impacts OCR/ALPR performance.		
105	If a vehicle has two license plates or cameras capture multiple front and rear images for a vehicle, the region of interest (ROI) for all license plates shall be obtained and the license plate number from all plates shall be extracted and associated to the vehicle transaction.		
106	Vehicles with two rear license plates shall be identified to allow the back-office to apply separate Business Rules for such transactions.		
107	The images transferred to the existing CSC/VPC system shall include, at a minimum, the front and rear full uncompressed image(s) and the ROI.		
108	Based on the OCR/ALPR results, the System shall identify the best license plate image that was used by the OCR/ALPR to obtain the license plate data including identification of front and rear images.		
109	The data transmitted along with the image shall meet the Approved ICD and shall include, but not be limited to:		
	· transaction data;		
	· license plate data, including license plate number, jurisdiction and plate type;		
	· confidence level of the OCR/ALPR results for individual characters and overall license plate number;		
	· confidence level of the jurisdiction, and		
	· enforcement notification status and action (if exercised).		
110	For audit and Maintenance purposes, Authorized Users shall have the capability to view all the images in real time on any device connected to the Cashless Tolling System network and verify the OCR/ALPR performance.		
111	For audit and testing purposes Authorized Users shall have the ability to perform image review, utilize image enhancement tools, and enter license plate data independent of the normal image processing workflow. A flexible user interface shall be provided that allows Authorized Users to select the image review criteria. Data entered through this process shall be transmitted to the Cashless Toll Host System for reporting.		
112	All data entered through the independent image review process for testing and audit described above shall be saved separate from the normal production environment and shall be available to Authorized Users through reports. Such an audit process shall not impact normal operations and in most cases will occur after the images are transmitted to the existing CSC/VPC system.		
2.1.6	**Enforcement Notification -** *Optional*		
	If the option to provide Enforcement Notification functionality is exercised, then the Contrator shall provide Enforcement Notification that results in the System meeting the requirements specified in the Scope of Work.		
113	The Cashless Tolling System shall support the Maintenance and update of VEL that contains transponder numbers and license plate numbers that the Commission requires notification on. This could include repeat violators.		
114	The VEL will be transmitted from the existing CSC/VPC system to the Cashless Toll Host System and from the Cashless Toll Host System to the lanes at frequent configurable increments and when changes take place.		
115	The Cashless Tolling System shall provide the capability to alert applicable personnel if the System detects a transponder or license plate passing through the cashless toll zone that is identified for enforcement notification. The criteria for notification shall include the status of the transponder and presence of the license plate on the VEL.		
116	Notification methods shall include but not be limited to text message, email or system to system interface.		
117	The System shall alert applicable personnel within twenty (20) seconds of the vehicle passing through the toll zone if a vehicle on the VEL is identified. The transponder ID, transponder status, license plate number and jurisdiction shall be included in the alert.		
118	If an enforcement notification was successfully transmitted to applicable personnel, the transaction shall have a flag denoting the transmission of the enforcement notification. This enforcement transmission status shall be transmitted to the existing CSC/VPC system.		
119	The System shall support the transmission of images (configurable) to the applicable personnel and shall include the image of the vehicle or just the ROI.		
2.1.7	**Zone Controller**		
2.1.7.1	**Zone Controller Hardware**		
120	A fully redundant zone controller shall be Designed, procured, furnished, and installed at each of the toll zones. The redundant zone controllers shall have the identical configuration.		
121	The zone controllers shall be installed in equipment racks and housed in the toll equipment building whether there is a single or dual toll equipment building at each tolling point.		

Functional Requirements			
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122	When any Hardware and/or process on the primary zone controller fails preventing it from processing vehicles and creating transactions, the secondary zone controller shall automatically and immediately assume the functions of the primary zone controller. The failover from the primary zone controller to the secondary zone controller shall be transparent to the rest of the System and shall not require human intervention or the restart of any subsystems. Only one zone controller at a time shall generate revenue transactions.		
123	Alarm messages shall be generated and reported to the MOMS when such a failover event occurs. The Contrator's failover Design shall ensure that there is no loss of revenue or transactions when one of the zone controllers fails.		
124	The System shall provide Authorized Users the capability to manually and remotely failover the active zone controller to and from the primary zone controller to the secondary zone controller. All such events shall be recorded and transmitted to the MOMS.		
125	The zone controllers shall be Hardened, industrial grade servers and the processor speed and memory shall be sufficient to process vehicles in real time to meet the traffic speed and volumes as specified in this Scope of Work.		
126	Storage shall be sized to store a minimum of thirty (30) days of transaction and event data for each lane at the toll zone supported by the zone controller.		
127	Proprietary zone controller Hardware will be considered for use, subject to the Commission's Approval. All drawings and instructions that enable construction and assembly, installation, repair, and modification of the Hardware, as well as sufficient property and use rights shall be provided to the Commission.		
2.1.7.2	**Zone Controller Software**		
128	The zone controller Software shall interface to the various devices and subsystems for each of the toll zone types specified in Attachment 1: Cashless Toll Zone Locations and perform all the functions as described in this Scope of Work for all Commission toll facilities.		
129	The zone controller located at each toll zone shall process all of the data obtained from the other subsystems as described in this Scope of Work to generate a transaction record for each vehicle passage through the toll zone. The zone controller shall:		
	· manage the TSL for all E-ZPass Group interoperable agencies used to validate the status of a transponder received from the AVI system;		
	· use the data obtained from the AVI and AVC systems to assign the transponder read to the correct vehicle and frame the vehicle transaction accurately;		
	· notify the LPICPS to capture and process vehicle images if no Valid Transponder read is obtained from a vehicle or if the Commission Business Rules require the capture of an image;		
	· transmit the transaction record to the facility server (if provided) or to the Cashless Toll Host System, including but not limited to the following data: vehicle detection and classification data, transponder data, Equipment status data, and all other pertinent information regarding the transaction as specified during the Design phase;		
	· transmit to the MOMS all alarm messages relating to the health of each subsystem, including the health of the primary and secondary (redundant) zone controller. Recovery messages shall also be transmitted and reported;		
	· ensure that vehicle event data and transaction data shall be accessible to the DVAS, and		
	· transmit to the facility server (if provided) or Cashless Toll Host System for further processing all other messages/events in accordance with Approved ICDs.		
130	The zone controller Software shall be configurable and shall be able to support the Commission Cashless Tolling operational needs without requiring changes to Software. The configurable parameters shall be defined and documented during the Design process. All parameters shall have default values that shall be established during the Design process.		
131	The Contrator shall propose appropriate Protocols and data structures to accomplish the communications required between various peripherals. These Protocols and data structures shall be fully detailed and documented, in Consultation with the Commission, by the Contrator during the Design process and Approved by the Commission.		
132	Guaranteed transmission Protocols shall be used for all messages exchanged between systems, including but not limited to:		
	· zone controller;		
	· LPICPS;		
	· AVI system;		
	· AVC system;		
	· facility servers (if provided);		
	· Cashless Toll Host System;		
	· image server(s);		
	· existing CSC/VPC;		
	· DVAS;		
	· MOMS, and		
	· the PTC Toll Host		

Functional Requirements			
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133	The Cashless Tolling System shall support the various lane configurations shown in Attachment 1: Cashless Toll Zone Locations. The zone controller application Software shall support all lane functions required to meet the Commission Cashless Tolling operational requirements.		
2.1.7.3	**Zone Controller Start-Up**		
134	Upon start-up or initialization the zone controller shall perform a self-diagnostics test to ensure full System operations. Alarm messages shall be reported for all failure conditions and a notification of the diagnostic check completion shall be displayed on the MOMS Dashboard. The failure of a critical system shall result in the toll zone operating under degraded operations in accordance with the Commission Business Rules.		
135	Upon start-up, the zone controller shall verify with the facility server (if provided) or the Cashless Toll Host Systems that it has the latest configuration files; VEL (if exercised); TSL; and any other files required to support the lane operations. If the latest files are not present on the zone controller, it shall request the latest data from the facility server (if provided) or Cashless Toll Host Systems. If a zone controller is unable to get the latest files, an Alert shall be generated and sent to MOMS.		
136	The zone controller shall also synchronize its time with the Commission time source and an Approved secondary source upon start-up and at established configurable intervals. The zone controller shall also support a secondary source for time synchronization.		
2.1.7.4	**Lane Operations**		
137	The Cashless Tolling System shall support various modes of operation that are managed and initiated by Authorized Users through the Cashless Toll Host.		
138	Transactions shall be processed according to different Business Rules either at the lane level or the host level based on the mode of operation. The Contrator shall be responsible for ensuring that the AVI and video transactions are processed according to Commission Business Rules and transmitted correctly to the existing CSC/VPC system.		
139	The Cashless Tolling System shall support the following modes of operations:		
	· Open Mode: All transactions shall be processed normally in an open mode;		
	· Maintenance Mode: Transactions created in Maintenance mode are processed as normal transaction but are identified as Maintenance mode transactions and transmitted to the Cashless Toll Host. Transactions that occur during Maintenance mode are not reported as traffic or revenue transactions.		
	· Emergency Mode: Transactions created during emergency mode shall be identified as emergency mode transactions and processed in accordance with Commission Business Rules to be determined during the Design phase.		
	· Save Image Mode: Capability shall be provided whereby Authorized Users can enable and disable a zone controller to save one hundred (100) percent of vehicle images processed through the LPICPS based on various selection criteria. Transactions under such condition shall be processed normally; however, these transactions and images shall be flagged with the save image mode and processed according to the Commission Business Rules (for example audit purposes).		
140	When a lane is operating in a mode other than normal open mode, an Alert shall be generated and sent to MOMS at regular (configurable) intervals.		
141	Authorized Users shall have the ability (local and remote) to configure the next operating mode and to gracefully shutdown the zone controller. Each time a mode change is requested an Alert message shall be sent to the MOMS.		
2.1.7.5	**Transaction Processing**		
142	The zone controller shall detect, classify, and frame vehicles; assign the transponder accurately to the correct vehicle and capture and process the image of the correct vehicle in accordance with the Commission Business Rules and with the performance requirements specified in this Scope of Work.		
143	The detailed transaction processing rules shall be defined and finalized during the Design phase; however, the following basic rules shall apply:		
	· the System shall have the ability to process and record multiple transponders in a vehicle and associate each transponder to the vehicle transaction;		
	· any non-E-ZPass Group interoperable transponder reads shall be reported to the Cashless Toll Host System;		
	· a minimum of one revenue bearing transaction shall be created for each vehicle that travels through the toll zone and the zone controller shall ensure that the transaction is complete prior to transmitting it;		
	· the zone controller shall be able to accurately identify, process, and track multiple vehicles in the toll zone;		
	· the zone controller shall ensure that duplicate transponder transactions (same transponder ID) are not reported from the same lane or toll zone within a configurable period of time or consecutively;		
	· buffered transponder reads that are transmitted to the zone controller shall be processed but not be assigned to a vehicle by the zone controller and shall be flagged and reported to the Cashless Toll Host Systems for further processing and vehicle assignment;		
	· the zone controller shall automatically synchronize with the various subsystems to ensure the events in the lane correspond to the transaction generated, and		

Functional Requirements			
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	· the System shall incorporate self-correcting logic to adjust for lane anomalies and event synchronization issues.		
144	The transaction message details shall be defined and finalized during the Design phase; however, the following basic rules shall apply:		
	· The In-lane System shall transmit the video transaction to the existing CSC/VPC system for processing and billing.		
	· the In-lane System shall transmit AVI and video transactions to the Cashless Toll Host Systems for processing, reporting, and reconciliation with the CSC/VPC;		
	· the transaction message shall contain all data required by the existing CSC/VPC systems to process the AVI and video transaction;		
	· each transaction shall contain various event times to help with transaction pre-processing and synchronizing events to a transaction including but not limited to: "vehicle entry" time; "LPICPS trigger" time; "transponder read" time; "transponder write" time, and "vehicle exit" time. Such event times shall allow transponder reads, images and transaction to be associated correctly with the vehicle, and		
	· the System shall assign a lane number to each transaction and report the lane in which the vehicle was detected.		
2.1.7.6	**E-ZPass Group Mapped Class**		
145	The System shall utilize the raw E-ZPass Group class obtained from the transponder data and map that raw class to the Commission E-ZPass Group proposed axle+dimension mapped class in accordance with Attachment 4b: E-ZPass Group Mapped Classes to be finalized during the Design Phase.		
146	The System shall retain the raw E-ZPass Group class and include that in the transaction data along with the E-ZPass Group mapped axle+dimension class for Commission.		
147	If a transponder has a raw E-ZPass Group class that is not mapped to the Commission E-ZPass Group axle+dimension class then the transaction shall be assigned a default class (configurable).		
2.1.7.7	**Revenue Vehicle Class (PTC Class)**		
148	The assignment of the Revenue Vehicle Class in normal operations and in degraded mode of operations shall be in accordance with the Commission Business Rules. If no classification data is obtained, a configurable default revenue class shall be assigned to the transaction and the transaction shall be flagged.		
149	The Revenue Vehicle Class shall be used to determine the fare amount for a transaction as defined by the Commission Business Rules. Flags in the transaction shall identify which class was used as the Revenue Vehicle Class.		
150	The System shall have the capability to cap the maximum and minimum (configurable) axles and class and to charge a set toll rate per additional axle count.		
151	Transactions shall include the raw E-ZPass Group class, AVC class, mapped E-ZPass Group class and Revenue Vehicle Class. The Revenue Vehicle Class assigned in accordance with the Commission Business Rules shall be used to determine the toll amount.		
2.1.7.8	**Fare Determination**		
	Fare determination is not required at the In-lane Systems, and can be performed at the Cashless Tolling Host or PTC Toll Host. The Contrator solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions and shall meet the following requirements. Currently the existing CSC/VPC system assesses the toll for violation transactions and will continue to do so for video transactions; however, the Contrator can assign the toll to video transactions if the Contrator solution provides this capability.		
152	Fare determination shall be performed at the In-lane Systems, the Cashless Toll Host system or the PTC Toll Host for all AVI transactions.		
153	The Contrator solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions.		
154	Fare determination may be performed at the In-lane Systems for all video transactions and may later be adjusted at the PTC CSC/VPC based on the transaction categorization, for example Vidoe Image Toll (Vtoll).		
155	Tolls shall be assessed using the toll rates and schedules established for each tolling point. The toll rate and class structure for the various toll facilities are not developed yet but the System shall support the toll rate and class structure for the classifications in Attachment 4a: PTC Proposed AVC Class Structure and Silhouette based on the toll location.		
156	The System shall support the assessment of toll by payment type for example video, E-ZPass, and Non-Revenue; vehicle class and location.		
157	Home Agency (Commission issued) Non-Revenue transponders shall be charged $0.00 (configurable) fare but Away Agency Non-Revenue transponders shall be charged the normal fare.		
158	Class 1 motorcycles with valid E-ZPass transactions that use a Home (Commission issued) transponder shall be charged a configurable discounted fare.		

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159	Motorcycles and other vehicles that qualify for discounted fare shall be identified by using the E-ZPass Group vehicle Type 2 which is comprised of E-ZPass Group class 136, 140 and 144. The category of E-ZPass Group class that qualifies for discounted fare shall be configurable.		
160	Motorcycle discount fares shall be rounded to the nearest penny (configurable) but shall be no less than the minimum fare (configurable). Currently the minimum fare is fifty (50) cents.		
161	The toll charged for E-ZPass transactions shall be based on Commission Business Rules developed during the Design phase and shall consider the operational status of the AVC.		
162	Tolls charged for video transactions shall be based on AVC (if it is operational) or the default class and shall be defined during the Design phase.		
163	Transactions shall be flagged if the vehicle class is estimated by the AVC system (for example, when the class is based on the vehicle profile).		
2.1.7.9	**Saving of Images**		
164	Images shall be captured and saved for the following conditions and as further defined during the Design process, including but not limited to:		
	· in all cases where there is no transponder read (including when the AVI system is down or degraded), the transponder is not "valid", or a non- interoperable read is detected;		
	· in all cases where there is a vehicle classification condition as determined by the Commission Business Rules, for example in conditions where the AVC class is estimated by the System;		
	· if the LPICPS loses communications with the zone controller in accordance with the Commission Business Rules;		
	· in all cases where there is a Class Mismatch between the transponder class and the AVC, as determined by the Commission Business Rules, and		
	· in conditions where the "save image mode" is enabled.		
165	Images saved during a LPICPS loss of communication event shall be flagged and subsequently matched with the correct transaction data when communication with the zone controller resumes. This matching can occur at the Cashless Toll Host but shall take place in a manner that does not interfere with or degrade real time zone controller operations.		
166	If the AVC system is not operational but the LPICPS trigger is functioning, images shall be saved such that all non-Valid Transponder transactions that occur during the AVC malfunction can be subsequently pursued for collection. Sufficient data shall be provided in the transactions to allow the PTC CSC/VPC to process such transactions so that customers are not charged in error when lane operation is degraded.		
2.1.7.10	**Configuration Files**		
167	All parameters and settings required to run the zone controller application and the lane equipment shall be maintained in configuration files. Access to configuration files required to support the zone controller operations shall be limited to Authorized Users.		
168	The configuration files shall be maintained at the toll zone and the Cashless Toll Host System for configuration and version control. All zone controllers shall have default configuration files that allow the lane to start-up automatically.		
169	Authorized Users shall be able to make changes to parameters and settings that are defined as configurable in this Scope of Work and in the Approved Design documents. Authorized Users shall be able to make changes to the configuration files in the field. Changes to configuration shall result in an Alert message to the MOMS. All changes made to the configuration files in the field shall be synchronized to the master configuration file that is maintained at the Cashless Toll Host.		
170	Each zone controller shall automatically back up its critical configuration files to a backup server once a day to be used to rebuild the master drive in the event of hard disk failures.		
2.1.7.11	**Zone Controller Interfaces**		
171	The zone controller shall interface to various devices and subsystems to transmit and obtain data and synchronize the time.		
172	The zone controller shall provide checks on all data it receives from each of the devices and subsystems it interfaces to and generate alarm messages that are reported to the MOMS.		
Interface to AVI System			
173	The zone controller shall interface with the designated AVI system in accordance with the Approved ICD and transmit all relevant transponder data received from the AVI system, as defined and Approved by the Commission during the Design phase, and reported as part of the vehicle transaction data to the Cashless Toll Host System.		
Interface to AVC System			
174	The zone controller shall interface with the AVC system to obtain vehicle events that shall permit accurate detection, classification, tracking and processing of vehicles. Vehicle class and speed information shall also be obtained from the AVC system and reported as part of the vehicle transaction data reported to the Cashless Toll Host System.		
Interface to LPICPS			

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175	The zone controller shall interface with the LPICPS to capture and process images of vehicles in accordance with the Commission Business Rules to be developed during the Design phase. The vehicle data, OCR/ALPR results (if the option to implement OCR/ALPR is exercised) and images obtained from the LPICPS shall be transmitted to the image server(s) to support the Commission's video tolling and processing requirements and PTC E-ZPass CSC operations requirements.		
Interface to DVAS			
176	The zone controller shall interface with the DVAS to transmit event data for display on the DVAS. The event data shall include transponder reads and AVC event messages that are received as the vehicle travels through the lane.		
Interface to Facility Server/ Cashless Toll Host System			
177	The zone controller shall interface with the facility server (if one is deemed necessary) or directly to the Cashless Toll Host System to transmit lane data and to receive files, commands, messages and other data required for lane operations. Error detection checks shall be instituted on both systems to ensure incorrect or corrupt data is not inserted into the System. The Contrator shall work with Commission IT Security to develop a secure method of allowing this flow of data through a Commission firewall into the network.		
178	The Cashless Tolling System shall include automated methods to determine when there is a loss of communications between the zone controller and the facility server (if provided) or Cashless Toll Host System; any failures detected shall be reported to the MOMS.		
179	The Cashless Tolling System shall include automated methods to determine when there is a loss of communications between the zone controller and the image server(s); any failure detected shall be reported to the MOMS.		
180	Receipt of all files and data shall be acknowledged; any transmission failures shall be reported to the MOMS.		
181	The Contrator shall provide an automated means of synchronizing the zone controller and facility server (if provided) or Cashless Toll Host System messages in the event that the zone controllers are replaced, communications are down, or if data on the zone controller is not retrievable due to a catastrophic failure.		
2.1.7.12	**Transmitting Data**		
182	All messages generated at the zone controllers shall be transmitted to the facility server (if provided) or Cashless Toll Host System in real-time using a transport mechanism that performs error detection and correction to guarantee data transmission. All messages shall be uniquely identified and validated at the Cashless Toll Host System to ensure there are no missing or duplicate messages.		
183	The System shall support exception handling in accordance with the Commission Business Rules Approved during the Design phase. An alarm shall be generated and reported to the MOMS for all failed transactions, exceptions and errors.		
184	Failure of transmission of data to the facility server (if provided) or Cashless Toll Host System shall result in the generation and transmission of alarm message to the MOMS.		
185	All messages shall be confirmed as received by the facility server (if provided) or Cashless Toll Host System before they are flagged for purging or overwritten. In the event of a communication failure the messages shall be retained on the zone controller until successful transmission is complete and verified.		
186	The zone controller shall transmit all data to the facility server (if provided) or Cashless Toll Host System, including but not limited to the following:		
	· all transaction messages generated in the lanes;		
	· all alarm and status messages generated in the lanes;		
	· all lane operational communication status messages and system health messages;		
	· all events generated in the lanes that are displayed on the Dashboard or are required at the Cashless Toll Host System, and		
	· all events required by the DVAS for real-time review or playback.		
2.1.7.13	**Receiving Data**		
187	The zone controller shall support the E-ZPass Group TSL and other interoperable agency lists and shall have the capability to support every Agency and its assigned transponder number range as described in the E-ZPass Group specifications.		
188	The zone controller shall accept comprehensive (complete list once a day) and incremental (changes updated on a configurable interval, but not more frequently than every sixty (60) minutes) TSLs in accordance with the established Business Rules and shall activate the lists upon validation of the files.		
189	The Contrator shall utilize data compression, encoding or other means to efficiently store and transmit the E-ZPass Group TSL and other interoperable agency lists, such that the new lists are available at the zone controllers within thirty (30) minutes of the Cashless Toll Host System receiving the new lists.		
190	If tolls are determined by the In-lane Systems, then the toll rates, toll schedules and the effective date/time shall be downloaded to the zone controller and new toll rates initiated when the toll rate structure changes.		
191	All configuration files and tables needed to support the lane operations shall be downloaded to the zone controllers from the Cashless Toll Host System upon confirmed change or at scheduled intervals and activated as required. Versions of the configurable files on each zone controller shall be maintained, tracked, and recorded.		

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192	All zone controller Software shall be downloaded to the zone controllers from the Cashless Toll Host System. Software versions on each zone controller shall be maintained, tracked, and recorded.		
193	The Cashless Tolling System shall provide checks to detect issues with the data it receives from the facility server (if provided) or Cashless Toll Host System, including but not limited to:		
	· incorrect versions of the data received;		
	· corrupted data received, and		
	· missing files when a file was expected.		
194	An alarm shall be generated and reported to the MOMS for all exceptions/errors.		
2.1.7.14	**Monitor All Lane Equipment for Device Status**		
195	Each zone controller shall monitor the status and system health of its internal components and all associated in-lane Equipment. All Cashless Tolling Systems, including the AVI system, AVC system and the LPICPS shall be continuously polled for status. The health of digital devices that do not provide status shall be inferred from events (for example simple loops).		
196	The System shall generate a recovery message and restore the operational status of a device that recovers after reporting a failure. Recovery messages shall be recorded against the original work ordered through the MOMS and shall be available to Authorized Users. Recovery messages shall not cause the associated work order to close, but shall serve as supporting evidence of an Equipment recovery.		
197	If communications from the zone controller to the facility server (if provided) or Cashless Toll Host System are unavailable, an alarm message shall be generated and reported to the MOMS.		
198	If communications to the image server(s) are unavailable, an alarm message shall be generated and reported to the MOMS.		
199	If a lane is operating in any mode other than normal open mode an Alert message shall be generated at configurable intervals and reported to the MOMS.		
2.1.7.15	**Diagnostics and Equipment Malfunction**		
200	The zone controller Software shall execute periodic diagnostic checks on internal processes, the in-lane Equipment and interfaces. Peripheral devices shall be interrogated for device status on a regular basis (configurable per device).		
201	A device's failure to respond to a status inquiry after a configurable number of retries shall be regarded by the zone controller Software as an Equipment failure.		
202	An alarm shall be generated and reported to the MOMS for all failures that are detected.		
203	Diagnostic checks shall be performed in all modes of lane operation. Results shall be stored in the appropriate zone controller's event log and easily accessible to technicians. The System shall include “sanity checks” for fault conditions and shall report any detection of such conditions to the MOMS.		
204	Degraded modes of operation shall be supported based on the Commission Business Rules developed during the Design process and Approved by the Commission. The Contrator shall ensure the Cashless Tolling System continues to operate with minimal loss of revenue or visible impact to the patron in the event that some components of the Cashless Tolling System fail and degraded mode operations occur.		
2.1.7.16	**Stand-alone Mode of Operation**		
205	The zone controller shall operate in a stand-alone mode for a minimum of thirty (30) days if communications to the Cashless Toll Host Systems are down. When operating in stand-alone mode, the last files downloaded from the Cashless Toll Host Systems shall be used for processing vehicles.		
206	The zone controller shall have an available data port to permit onsite manual uploading of Software, TSL or other data required for continued operation until communications with the Cashless Toll Host Systems is re-established. Devices utilized to download the TSL and rate tables to the lanes shall have the capability of synchronizing current file versions such that a new TSL is updated on the device within an hour of receipt.		
207	The System shall provide the capability for Authorized Users to download transactions from the zone controller and to transfer such transactions to the Cashless Toll Host Systems, and from the Cashless Toll Host Systems to the existing CSC/VPC system.		
208	The System shall provide the capability for Authorized Users to download event/transaction data for manual and stand-alone playback of the DVAS.		
209	Upon re-establishing communications with the Cashless Toll Host Systems all back-logged messages, including manually transferred messages, shall be flagged and transmitted to the Cashless Toll Host System without affecting the real time operations or degrading lane operations.		
210	Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be generated and reported to the MOMS.		
2.1.8	**Digital Video Audit System (DVAS)**		
211	The Contrator shall provide a Digital Video Audit System (DVAS) that provides the Commission the capability to investigate lane performance issues and support the Commission in customer dispute resolution.		

Functional Requirements			
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212	The Contrator shall develop, procure, furnish and install two or more IP addressable, color video cameras as part of the DVAS at each toll zone sufficient to meet the requirements of this section. The cameras installed shall be the same at all Toll Zones.		
213	Authorized Users shall have the ability to individually setup, configure and control the cameras remotely through the application. Configurable settings shall be available on a per-camera basis to allow for tuning for site conditions.		
214	As part of the Design phase, the Contrator and the Commission shall determine the optimum location for the installation of the DVAS Equipment to allow for the complete monitoring of each toll lane.		
215	The location and number of cameras shall permit the capture of video that allows Authorized Users to identify the vehicle class and number of axles based on the ambient lighting conditions.		
216	The Contrator is responsible for the installation of the DVAS Equipment, including mounting Hardware to the designated structure (either toll gantry or separate mounting pole) as well as power and signal cabling between the DVAS Equipment and the storage media as described in Attachment 2: Cashless Tolling Installation Responsibility Matrix.		
217	The DVAS cameras shall have pan-tilt-zoom (PTZ) functionality that allows Authorized Users to remotely control each camera. When no PTZ commands are received within a configurable time the DVAS cameras shall revert to their default settings. Alarm messages shall be generated and reported to the MOMS when remote controls are activated or settings other than the defaults are detected.		
218	The Contrator shall provide the lighting requirements to the civil Contrator during the Design phase, as needed to ensure that the quality of the video of each toll lane, based on ambient lighting and/or weather conditions, is sufficient to meet the requirements.		
219	The DVAS shall include all Equipment and Software necessary to provide the audit capability described herein, including but not limited to:		
	· digital cameras and any associated lenses, lighting and sensors;		
	· interfaces to the zone controllers to capture event data;		
	· storage media, and		
	· an application to view real-time video and events and playback the information.		
220	The DVAS video stream and audit data shall be provided to the Cashless Tolling System independently of the transaction data stream; however, the DVAS shall be integrated into the System application and the video stream shall be linked to the transaction to meet the requirements specified in this section.		
221	The Contrator shall provide Authorized Users the ability to access to the DVAS through the Cashless Tolling System application using any device authorized by the Commission with access to the Commission System network.		
222	The DVAS video and event data shall be available from the Dashboard to Maintenance staff when investigating anomalies.		
223	The DVAS solution for each tolling point shall provide the capability to monitor the overall configuration of the toll lanes with the ability to see each lane and the vehicle traveling that lane, and shall display detailed events for each lane as they occur in real-time.		
224	At a minimum the DVAS shall display the highway, plaza ID, lane number, transaction number, transaction date and time, transponder ID, transponder class and the AVC class. The DVAS video and data shall be accessible in read-only mode; no changes or alterations to the video or data shall be allowed.		
225	All detailed data obtained from various subsystems shall be available and shall be displayed to assist auditors and Maintenance staff with the investigation of discrepancies and problems. The DVAS shall perform and display video and data in real-time and shall have the ability to playback event data.		
226	The DVAS shall also have the capacity to record and store up to a minimum of sixty (60) days (configurable) of video and data to an electronic media for each toll zone.		
227	DVAS video and the corresponding event and transaction data shall be saved together such that when the data is moved to a different environment outside the production environment, the video can be replayed with the corresponding event and transaction data as long as the DVAS replay Software is available.		
228	The health of the DVAS shall be displayed and monitored. Any problems or failures detected shall be reported to the MOMS.		
229	The DVAS shall be time synchronized to the same source as the zone controllers and shall interface to the zone controllers to obtain event data in accordance with the Approved ICD.		
230	The DVAS screens shall allow the Authorized User to obtain and sort the video/data events through various query criteria or configurable report templates finalized during the Design phase, including but not limited to:		
	· lane ID;		
	· vehicle class;		
	· transaction time;		
	· payment type;		
	· transaction time range;		
	· alarm condition;		

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	· class mismatch condition;		
	· unusual event conditions;		
	· transponder ID, and		
	· transponder status.		
231	Identification displayed on the screen shall allow the reviewers to clearly differentiate the lane under review and its associated event data.		
232	The DVAS shall provide the capability to save the displayed contents of a screen (images and data) and electronically distribute such information as needed.		
233	Controls shall be provided to allow reviewers to step forward and backward through video data, by frame and to display the associated event data. All digitized video and corresponding event data shall be tightly synchronized and stored in accordance with these requirements.		
2.1.9	**Cashless Tolling Facility Server (Optional)**		
	The provision of a facility server is optional but if the Contrator's solution includes a facility server, then the requirements in this section shall be met. The Contrator has the option to use the facility server as an image server as long as the Design complies with the requirements of the Scope of Work.		
234	The Contrator shall provide one or more facility servers located at a tolling point if it is deemed necessary to meet the requirements specified in this Scope of Work. A facility server or set of servers can support multiple toll zones.		
235	The Contrator shall furnish and install a complete Hardware configuration for each facility server to support the redundancy and performance requirements of this Contract, including but not limited to:		
	· multiple processors;		
	· dual, redundant, hot-swappable power supplies;		
	· redundant storage devices; and		
	· backup library.		
236	The Hardware solution shall provide high-speed intra system network fabric between all storage, databases, servers, and backup systems.		
237	The facility server shall interface to the zone controller and shall serve as a store and forward server for transactions and messages.		
238	Each facility server shall communicate with the primary and secondary Cashless Toll Host Systems.		
239	Each facility server shall be capable of storing transactions and images (if used as a local image server) from the in-lane subsystems for a period of minimum sixty (60) days, in the event of a communications failure.		
240	The facility server shall be capable of operating in a stand-alone mode for a minimum of sixty (60) days if communications to the Cashless Toll Host Systems are down. When operating in stand-alone mode, the last files downloaded from the Cashless Toll Host Systems shall be used for processing vehicles.		
241	The facility server shall have an available data port to permit onsite manual uploading of Software, TSL, or other pertinent data required for continued lane operation until communications with the Cashless Toll Host Systems are re-established. Devices utilized to download the TSL and rate tables (if applicable) to the facility server shall have the capability of synchronizing the current versions whereby a new TSL is updated on the device within an hour of receipt.		
242	The System shall provide the capability for Authorized Users to download transactions from the facility server and transfer such transactions to the Cashless Toll Host Systems.		
243	Upon re-establishing communications with the Cashless Toll Host Systems all back-logged messages, including manually transferred messages, shall be flagged and transmitted to the Cashless Toll Host Systems without affecting the real time operations or degrading the lane operations.		
244	Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be transmitted to the MOMS.		
245	Failure of any component of the facility server shall be detected and reported to the MOMS.		
2.1.10	**Roadway Pavement, Overhead Structures/Toll Gantries, and Toll Equipment Building Design Support**		
2.1.10.1	**General Design Requirements**		
246	At the tolling points the Contrator shall install the toll collection equipment on the infrastructure provided by the civil Contrator as identified further in Attachment 2: Cashless Tolling Installation Responsibility Matrix.		
247	The Contrator shall work with the Commission, the civil designer and civil Contrator on requirements for all civil construction work to be performed by others on the Project, including overhead platforms/toll gantries, toll equipment buildings, roadway/pavement, power requirements and conduit relative to the aspects that integrate with the Design and installation of the Cashless Tolling System.		
248	The Contrator shall cooperate and provide support as needed to the civil Design and construction efforts. During civil design, Contrator support is anticipated to include responses to information requests for clarification on proposed designs.		
249	During construction, Contrator shall provide review and approval of civil Contrator shop drawings or similar within the context of the toll system functional and performance requirements.		

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250	During installation, the Contrator shall provide verification and approval of toll system related elements that the civil Contrator is responsible for installing.		
251	Upon approval of shop drawings or similar design elements by the Contrator within the context of System function and performance, Contrator shall assume responsibility for those elements to the extent that if the civil work is installed as designed and does not meet the performance requirements of this Scope of Work, the Contrator shall be responsible for the costs of redesign, civil rework and additional Equipment costs as further set forth in the Contract.		
252	Contrator shall also coordinate and be available onsite as needed during the installation of the civil elements related to the Cashless Tolling System to ensure that the civil work is performed in accordance with the Contrator's requirements.		
2.1.10.2	**Overhead Structures/Toll Gantries**		
253	The Contrator's Equipment mounting and installation Design for any AVC overhead Equipment, AVI Equipment and LPICPS Equipment shall take into consideration its accessibility from the walkways on the overhead structure at the tolling points. The Design of the mounting structures and mounting arm shall allow technicians to replace Equipment and restore it to normal operations without additional tuning and without impacting performance.		
254	The Contrator's cable routing Design shall include sufficient service loops to facilitate the retrieval of Equipment from the walkway providing sufficient retractable capability.		
255	The Contrator shall provide in-lane Equipment Design, installation specifications, structural requirements and drawings for mounting the Equipment to the overhead structures/toll gantries at each toll zone as it relates to the Contrator's Equipment requirements to the civil Contrator(s), including but not limited to Equipment mounting locations and installation instructions, mounting structure and mounting arms, conduit, junction box, and electrical requirements, wind load, Equipment load and power calculations, as well as Contrator requirements related to special electrical grounding and isolated circuit integrity by Equipment.		
256	The Contrator shall also review and Approve all aspects of toll overhead structures/toll gantries design drawings submitted by the civil Contrators that are related to the toll system Equipment, including but not limited to, the items identified in the requirements above in this section.		
257	The Contrator shall be responsible for all necessary mounting Hardware required to install the toll Equipment on each overhead structure/toll gantry as specified in this Scope of Work and shall ensure installation is in compliance with Commission specifications.		
258	The Contrator's Equipment installation Design shall have all overhead Equipment tethered to the platform structure at all times during installation and removal. The Equipment mounting devices shall also be tethered such that no loose bolts, nuts or pins shall fall into live traffic during Maintenance activities.		
259	The Contrator shall be responsible for all Equipment installations, terminations, and connections of Equipment located on the overhead structures/toll gantries and for connecting such Equipment to the electronics in the equipment racks within the toll equipment building.		
2.1.10.3	**Uninterruptible Power Supply (UPS)**		
260	All Cashless Tolling System Hardware and equipment shall be on UPS. The UPS will be supplied by the civil Contrator.		
261	The civil Contrator will furnish and install automatic transfer switch (ATS) and smart Power Distribution Units (PDUs) to manage the roadside power distribution.		
262	The Contrator shall furnish and install an electronic interface to the UPS to monitor the UPS performance. The MOMS shall detect the status of the UPS and Alert technicians when the System is on UPS.		
263	Software drivers shall be developed, furnished, and installed to acquire, display, store and report all parameters provided as outputs from the UPS.		
264	When the System is on the UPS and when it is off the UPS a notification shall be reported to the MOMS.		
2.1.10.4	**Toll Equipment Building**		
	A toll equipment building with UPS, backup generator and Heating, Ventilation and Air Conditioning (HVAC) will be provided by the civil Contrator at each tolling point indicated in Attachment 1: Cashless Toll Zone Locations. The emergency backup generators are contained in a separate room with outside access as shown in Attachment 5: Concept Plan for Overhead Structure/Toll Gantries.		
265	The toll equipment building shall house the Cashless Tolling System equipment racks provided by the Contrator.		
266	The Contrator shall provide the equipment rack space requirements to the civil Contrator for each toll equipment building at each tolling point.		
267	The Contrator shall install equipment racks within the toll equipment building in accordance with applicable Pennsylvania State building codes and Pennsylvania State DOT design standards, if and where applicable.		
268	The Contrator shall adhere to all specifications of the latest PennDOT Standard Specifications at time of construction unless the Contrator receives written notification by the Commission which overrides the Standard Specifications. The PennDOT Standard Specifications can be found at: http://www.dot.state.pa.us/Internet/Bureaus/pdDesign.nsf/ConstructionSpecs408and7?OpenForm		

Functional Requirements			
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269	At locations where tolling points are in close proximity to one another, a single toll equipment building with backup power generator will be used to support the toll Equipment requirements for multiple toll zones. At locations where a single toll equipment building is used for the Equipment at multiple toll zones, the Contrator shall procure, furnish, and install the interconnecting signal and power cables, and the necessary equipment racks and Equipment required for the multiple toll zones. The civil Contrator is responsible for the provision of power and the raceway. The Contrator shall ensure that the lane performance is not degraded at locations where a single toll equipment building is utilized for multiple toll zones and that cable lengths are within manufacturer specifications.		
270	The Contrator shall also review and Approve all aspects of the toll equipment building design drawings, power specifications, electrical and cabling design, circuit breaker and switches, and grounding design submitted by the civil designer and civil Contrators that are related to the Cashless Tolling System Equipment.		
271	The civil Contrators will install the conduits between the toll equipment building and the demarcation point on the overhead structures/toll gantries as shown in Attachment 6: Installation Demarcation Diagram. The Contrator shall procure, furnish and install any conduit required from the demarcation point to the Equipment and between the various components on the overhead structures/toll gantries.		
272	The Contrator shall procure, furnish, and install the cables necessary for terminating and connecting the Cashless Tolling System Equipment on the overhead structures/toll gantries to the electronics in the toll equipment building. Cable lengths shall include sufficient service loops to facilitate maintenance.		
273	The Commission is responsible for the WAN communications and the Commission will furnish and install networking equipment at the toll equipment building and test the communications to the network at the PTC Data Centers. The Commission shall make available a number of ports, as specified during the Design phase, to the Contrator to allow access to the Commission network through the Commission administered firewall. The Contrator shall be responsible for all LAN communications related to the Cashless Tolling In-lane System and the Cashless Toll System outside the Commission firewall as shown in Attachment 3b: PTC Communications Network Responsibilities.		
274	Each location will be allotted an IP v4 Class C range of addresses and all networking addressing will be coordinated with the Commission. LAN equipment shall be capable of supporting IPv6 addresses.		
2.1.10.5	**Roadway Pavement**		
275	During the Design phase the Contrator shall provide the in-pavement sensor requirements to the civil designers and civil Contrators, if such sensors are to be used. Additionally, the Contrator shall review and approve the pavement Design, including roadway material to be utilized and construction methods to be used in the construction of the pavement.		
276	The Contrator is responsible for the Design and installation of all elements of the Cashless Tolling System that embedded into the pavement.		
277	The Contrator shall coordinate with the civil designer and civil Contrators for the installation of the sensors in the lanes and identify the pull boxes and conduits. The location and Design of the pull boxes shall minimize the impact of Maintenance activities on the affected lane.		
2.2	**Cashless Toll Host System Functional Requirements**		
2.2.1	**Cashless Toll Host System – General Requirements**		
278	The Contrator's central processing system architecture shall include a fully redundant highly available primary and secondary Cashless Toll Host System that meets the functional and performance requirements of the Scope of Work and is accessible to Authorized Users of the Commission System network.		
279	The functions of the Central Image Servers (if provided) and the MOMS shall be part of the Cashless Toll Host System.		
280	The cashless toll collection process shall be administered and controlled by the Cashless Toll Host System provided by the Contrator.		
281	The Contrator shall work with the Commission to procure, furnish, and install all servers, storage and communications Hardware needed to support the Software that meets the Commission Cashless Tolling System requirements. While choosing the Cashless Toll Host System Hardware and third-party Software, the Contrator shall consider the staged implementation of the Cashless Tolling System in order to ensure the products are supported for the entire duration of the PTC Cashless Tolling Project.		
282	The primary Cashless Toll Host System shall be installed in the PTC Data Center, a different physical location in the vicinity of the PTC Data Center, or a privately hosted Cloud location Approved by the Commission. The secondary solution can be hosted anywhere within the contiguous United States or an Approved, privately hosted, Cloud location. All infrastructure required to support the servers, including but not limited to UPS, air conditioning, security and backup generators shall be the responsibility of the Contrator. The primary and secondary Cashless Toll Host System configuration shall meet the Commission resiliency and Business Continuity plans.		
283	The secondary Cashless Toll Host System shall be configured as a "hot stand-by" in an active-active state to allow continuous operations in the event of a failure of the primary Cashless Toll Host System.		

Functional Requirements			
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284	The secondary Cashless Toll Host System environment shall mirror the primary system in all Hardware and Software configurations, be kept up to date and be capable of performing all functions of the primary Cashless Toll Host System as described in this Scope of Work.		
285	All Hardware and third-party Software procured under this Scope of Work shall be confirmed to be the latest model or version at the time of purchase and shall be Approved by the Commission.		
286	All servers and Hardware procured, furnished, and installed under this Contract shall have current anti-virus, firewall, spam protection and other security Software that protects from virus attacks and unauthorized access. All such third-party products shall meet the Commission IT security requirements described in Attachment 7: PTC Cashless Tolling Security Standards.		
287	The System shall detect intrusion attempts and prevent all unauthorized access and intrusions at all levels and report such events to the MOMS. Any intrusion, compromise or breach must be reported to Commission IT Security with 12 hours of detection.		
288	Virus protection and other Software shall automatically obtain updates according to a recommended (configurable) Maintenance schedule and report such events to the MOMS.		
289	Redundancy shall be built into the System to support high availability requirements defined in table II-2.		
290	The Cashless Toll Host System shall support the following general functions:		
	· communicate with all the zone controllers in receiving transaction, alarm and other messages and transmitting TSLs, UIL and VEL (if exercised);		
	· communicate with facility servers (if provided) in receiving transaction, alarm and other messages and transmitting TSLs, UIL and VEL (if exercised);		
	· communicate with the applicable image server(s) for tracking and reconciliation image transmission and transfer status;		
	· provide Dashboards to assist Maintenance and supervisory staff observation of transaction and event data in real-time, including reviewing DVAS image/video, images and data through these screens;		
	· provide the capability to remotely operate the cashless tolling lanes through real time screens;		
	· interface with the existing PTC Toll Host system to transmit transaction details and alarms;		
	· provide the capability to import detailed and summarized data from the existing PTC Toll Host for historical reporting purposes;		
	· interface with the existing CSC/VPC system to transmit transactions and toll rates and receive TSL and VEL (if exercised);		
	· interface with SAP for the transmission of monthly toll transaction GL files and GL files received from the CSC;		
	· perform Maintenance management functions of the System, including alarm notification and tracking, Equipment inventory, Maintenance history and other Maintenance related functions, incorporated into the MOMS;		
	· provide an independent audit of successful receipt of all transactions from the zone controllers to the Cashless Toll Host System;		
	· provide the capability to manage toll rate/toll schedule and transmit the toll rates/toll schedules to the zone controllers and the existing CSC/VPC system;		
	· provide the capability to obtain employee information defined in the Design phase such as employee ID, role and access privileges from Active Directory and, if required, to transmit the (UIL to the zone controllers;		
	· provide various management reports that assess the operational performance of the System, and		
	· provide transaction reconciliation reports as determined by the Commission during Design.		
2.2.2	**Cashless Toll Host System Hardware and Third-party Products**		
291	The Work under this section shall include all labor, materials, and support Services to complete the Design; fabrication; assembly; integration; packaging; delivery; testing, and Acceptance of the primary Cashless Toll Host System Hardware and third-party Software in accordance with the requirements of this Scope of Work.		
292	The Commission shall have ownership of all Hardware, third-party Software and firmware procured, developed, furnished, and installed as part of the Cashless Toll Host System.		
293	The Contrator is responsible for obtaining all required licenses in the name of the Commission. All licenses and media shall be provided to the Commission for all Hardware, third-party Software and firmware. The Contrator shall retain authorized copies (backups) for all Software media to use for periodic system Maintenance, upgrades, or restore, as required.		
294	The Contrator shall furnish and install a complete, fully redundant, Cashless Toll Host System Hardware configuration needed to support the redundancy and performance requirements of this Contract, including but not limited to:		
	· multi-processors		
	· dual, redundant, hot-swappable power supplies;		
	· storage devices, and		
	· storage devices, backup library.		

Functional Requirements			
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295	The Cashless Toll Host Hardware solution shall provide high-speed intra system network fabric between all storage, databases, servers, and backup systems.		
296	The System Design and implementation shall ensure the Cashless Tolling System continues to operate without data loss even if any unit of the server configuration fails.		
297	All components, supplies, Software and materials furnished under this Contract shall be new, commercial off-the-shelf (COTS) and field proven, and in revenue operations for two (2) years.		
298	The Cashless Toll Host System server configuration, including all major Hardware elements, shall be of the latest design and incorporate standard commercial products currently in production.		
299	All components procured, furnished, and installed by the Contrator should have the capability of sourcing from multiple Suppliers. The intent is to increase compatibility and reduce maintainability problems.		
300	Proof of purchase in the form of dated invoice and shipping bills shall be retained and furnished to the Commission in accordance with the requirements of this Scope of Work and Contract for all Hardware purchased by the Contrator.		
301	The Cashless Toll Host System Hardware shall have a minimum manufacturer warranty for five (5) years.		
302	The Cashless Toll Host System Hardware shall be supported for the duration of the Contract after the date of Operational Test Acceptance. During the life of the Contract the Contrator is responsible for ensuring the system is operational in accordance with the performance requirements.		
303	The Contrator shall use proven server configurations that support future upgrades to processors, memory, storage, operating system, database, and other system components. All third-party Hardware and Software and Contrator Software shall be Hardware neutral and shall perform without intervention on any Hardware platform.		
304	The System architecture shall have expansion capability to support a ten (10) year growth in traffic volumes in its installed Hardware which includes support of video tolling at the tolling points. For the purposes of calculation, an average E-ZPass penetration of seventy (70) percent and video transaction rate of thirty (30) percent, with ranges from 60-80% E-ZPass depending on locations throughout the system shall be assumed for the tolling point.		
305	The operating system for the Cashless Toll Host System servers shall be a proven system used widely throughout the United States for intensive database operations and shall be compatible with the Relational Database Management System (RDBMS) and other tools employed.		
306	The operating system for the Cashless Toll Host System servers shall be a multi-user, multi-tasking operating system.		
307	The operating system shall support the redundant Cashless Toll Host System server architecture and all peripherals defined in these specifications.		
308	The operating system shall also support the proposed communications topology, redundant Cashless Toll Host System configuration and Contrator's application Software.		
309	The Contrator shall warranty the operating system for a minimum of five (5) years from the date of Operational Test Acceptance.		
310	The operating system shall have a future upgrade path and shall be supported for the term of the Contract.		
311	The Contrator shall provide and maintain supported versions of the operating system for the term of the Contract and all upgrades of the Cashless Tolling System operating system shall be the Contrator responsibility.		
312	The Contrator shall keep all Software instances throughout all environments at the same configuration and patch level.		
313	The Contrator shall provide a highly reliable and secure RDBMS for the storage of images, video, transaction data, violation data, audit data, and all other data, as applicable, for the retention period specified in the Scope of Work.		
314	Contrator shall provide the latest version of the RDBMS that is field-proven to operate in a transaction intensive environment and shall meet the standards as defined in Attachment 12: Database Standards for the Pennsylvania Turnpike Commission, where applicable.		
315	The RDBMS shall be compatible with the operating system and application Software, and shall support the redundant Cashless Toll Host System server architecture and shall meet the standards as defined in Attachment 12: Database Standards for the Pennsylvania Turnpike Commission, where applicable.		
316	The RDBMS shall have an upgrade path and shall support upgrades to operating system, application, memory, processors, and other components.		
317	The RDBMS shall have Maintenance and Upgrade Services for the term of the Contract.		
318	The Contrator shall provide and maintain supported versions of the RDBMS for the term of the Contract and shall be responsible for upgrading the Cashless Tolling System RDBMS to the latest supported version.		
2.2.2.1	**Central Image Server (Optional)**		
	The provision for a central image server is optional; however, Contrator's image processing solution shall meet the functional and performance requirements of the Scope of Work. The Design shall support latency in the transfer of images to the existing CSC/VPC system and prevent loss of images and video transactions if there are communications or server issues. If the Contrator's solution includes the provision for a central image server, then the central image server shall be located at a Commission Approved location.		
	The image processing solution shall support, but not be limited to the following general functions:		

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319	· communicate with all the in-lane LPICPS for the transmission, tracking, reconciliation and processing of all vehicle images and video transactions;		
	· communicate with facility servers (if provided) for the transmission, tracking, reconciliation and processing of all vehicle images and video transactions;		
	· interface with Cashless Toll Host System for the processing and reconciliation of all vehicles images and video transactions;		
	· interface with existing CSC/VPC system for the processing and reconciliation of all vehicles images and video transactions;		
	· support the transfer of images and video transaction to the existing CSC/VPC system without loss of any image or video transaction, and		
	· provide reconciliation reports as determined by the Commission during Design.		
2.2.2.2	**Data Backup**		
320	The Cashless Toll Host System shall include data backup Software and Hardware that allows remote incremental and full back up of data without manual intervention. Events from the backup Software and status notifications from the backup process shall be reported to the MOMS.		
321	During the installation of the Cashless Toll Host servers, the Contrator shall create an image of the completed server configurations, as well as maintain regular local and remote backups. If there is a catastrophic failure that results in the loss of data, means shall be provided to reconfigure the servers without disruption to Cashless Toll Host System operations.		
322	The backup Software shall be capable of displaying the backup data in a user-friendly and readable form as defined during the Design phase.		
323	The Contrator shall provide a solution for data backup storage locally and off-site.		
2.2.2.3	**Archive and Purge Control Mechanisms**		
324	Provide the capability for fully automated and configurable data purging in accordance with the Commission's data retention requirements as defined in Attachment 8A: PTC Records Management Manual, Attachment 8B: PTC Records Retention Schedule and during the Design phase.		
325	Purge routines shall be configurable for each impacted data elements, including but not limited to:		
	· transaction data;		
	· images;		
	· video;		
	· System logs;		
	· MOMS data, and		
	· interface files.		
326	Servers shall retain transaction and summarized data, images, MOMS data and system logs, in accordance with the retention procedures, including but not limited to:		
	· Cashless toll transactions shall be retained online for a minimum of twenty four (24) months and then archived and purged;		
	· compressed images associated with class mismatch transactions shall be retained online for a minimum of ninety (90) days and then archived and purged;		
	· video transactions and images (compressed video transaction image and region of interest{if implemented}) online for a minimum of six (6) months and then archived and purged;		
	· DVAS video shall be retained online in accordance with the requirements of this Scope of Work;		
	· summarized data shall be retained online for the term of the Contract;		
	· system logs shall be retained online on the System for at least ninety (90) days and then archived and purged;		
	· All security logs shall be retained online for at least one (1) year and then archived and purged;		
	· MOMS detailed data shall be retained online for a minimum duration to ensure MTBF requirements are being met or at least twenty-four (24) months, whichever is greater;		
	· MOMS summary data shall be retained online for the term of the Contract, and		
	· all other data shall be retained on the System for ninety (90) days and then archived and purged.		
327	Status and other events from the archival process shall be reported to the MOMS. No transactions shall be deleted unless confirmed to be successfully archived.		
328	Storage shall be sized to accommodate all data to be retained online as specified in this Scope of Work and for the restoration of selected archived data (two months minimum).		
329	Authorized Users shall be able to report on restored data.		
2.2.2.4	**Maintenance Access and Application Access**		
330	The Cashless Toll Host application shall run on existing workstations and laptops and Commission Authorized Users shall use their workstations/laptops to access the System. The Contrator is not required to procure, furnish, and install Commission workstations/laptops as part of the Cashless Toll Host System.		
2.2.2.5	**Maintenance Access**		

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331	The Contrator shall procure, furnish, and install the required laptops, keyboards, video monitors, mouse(s), and KVM switches at the In-lane and Cashless Toll Host Systems locations to allow the Contrator technical staff to access all servers, controllers, computers, and devices in order to perform diagnostics and other Maintenance activities.		
332	All maintenance Hardware and Software installed on the In-lane and Host Systems shall comply with Commission security requirements defined in Attachment 7: PTC Cashless Tolling Security Standards.		
2.2.2.6	**Commission Access**		
333	Any Commission authorized workstation/laptop connected to the Commission System network shall be able to access to the System application.		
2.2.2.7	**Printers**		
334	The Commission shall have the ability to print to any printer connected to the Commission System network. The Contrator is not required to procure, furnish, and install any printers for the Commission as part of the Cashless Toll Host System.		
2.2.2.8	**Communications Equipment**		
335	The LAN within a toll equipment building shall be connected by CAT6 (or higher) cabling and the LAN between Site toll equipment buildings shall be fiber. The WAN connectivity between the toll equipment buildings at each Cashless Toll Site and PTC Data Centers shall be provided by others. The Contrator shall be responsible for providing and obtaining the connectivity from any primary or secondary Cashless Toll Host locations to the PTC Data Center.		
336	The Cashless System at the toll zones shall be connected and communicate to the primary and secondary Cashless Toll Host System and the existing CSC/VPC system.		
337	The Contrator shall procure, furnish and install all required Tier 1 communication Equipment at the toll equipment building to support the Cashless System LAN. All LAN communications Equipment procured, furnished, and installed under this Contract shall be able to communicate with the Commission firewall and router.		
338	The Commission is responsible for providing a WAN demarcation point (Ethernet hand off) at each Cashless Toll Site. The Contrator shall work with Commission IT staff to make the necessary connections and validate the connectivity between the Cashless Toll Site Systems and the Cashless Toll Host Systems. The LAN equipment at a Cashless Toll Site, its configuration, and the connection of the LAN equipment to the WAN demarcation point as shown in Attachment 3b: PTC Communications Network Responsibilities shall be the responsibility of the Contrator. Network addressing and connectivity will be coordinated with Commission IT staff.		
339	The Commission is responsible for providing a demarcation point (Ethernet hand off) in the Commission's Data Center to the primary Cashless Toll Host System site. The Contrator shall work with Commission IT staff to make the necessary connections and validate the connectivity between the PTC Data Center and the Cashless Toll Host System site. The LAN equipment at the primary Cashless Toll Host System site, its configuration, and connection to the demarcation point as shown in Attachment 3b: PTC Communications Network Responsibilities shall be the responsibility of the Contrator. Network addressing and connectivity will be coordinated with Commission IT staff.		
340	The Contrator may install the secondary Cashless Toll Host Systems at a Contrator location within the contiguous states of the United States as Approved by the Commission. The secondary Cashless Toll Host System can be housed in a Commission Approved privately hosted Cloud site. The Contrator is responsible for securing the connectivity from such secondary location to the PTC Data Center. If a cloud environment is desired, the Contrator must work with the Commission to determine appropriate architecture and security measures.		
341	The Contrator shall work with the Commission in designing the interfaces between the Cashless Toll Host System, the existing CSC/VPC system, the PTC Toll Host system and SAP.		
342	The Contrator shall work with PTC in designing the interfaces between the In-Lane Systems and the existing CSC/VPC system.		
343	Network monitoring Software shall be procured, furnished, and installed on the MOMS server to monitor the System LAN status and communications, including the connections to the PTC Toll Host system, the In-lane Systems, the CSC/VPC system and SAP. All network alarms shall be reported to the MOMS.		
344	If communications to any element of the Cashless Tolling System is degraded or down an alarm shall be generated and reported to the MOMS.		
2.2.3	**Cashless Toll Host System Software**		
	The Cashless Toll Host System Software shall support the functionality detailed in this section and shall meet the Commission operational requirements set forth in this Scope of Work and Contract for the Term of the Contract.		
2.2.3.1	**Data Communications and Interface Requirements**		
345	All transactions, images and messages transferred between all subsystems shall be guaranteed and have the required data validation Protocols to confirm the accuracy and validity of data transfer.		
	The Cashless Toll Host System shall support the interfaces specified in this Scope of Work including, but not limited to:		

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346	· Interface to the zone controllers: If the Contrator's solution does not include a facility server, the Cashless Toll Host System shall receive and store all the messages from the zone controllers in real-time. It shall transmit all data required by the zone controllers to support its operation, including the UIL and TSL. All data sent to and received from each zone controller and the Cashless Toll Host System shall be acknowledged and confirmed.		
	· the VEL shall be transmitted from the Cashless Toll Host System to the In-lane System to support on-site enforcement (if exercised).		
	· Interface to the facility servers (if provided): If the Contrator's solution includes a facility server, the Cashless Toll Host System shall have the capability to transmit all data to and receive data from the facility servers as required in this Scope of Work to support lane operations. All data sent to and received from each facility server at the Cashless Toll Host System shall be acknowledged and confirmed.		
	· Interface to the PTC Toll Host system: The Cashless Toll Host System shall have the capability to transmit detailed transactions and alarms to the PTC Toll Host system in batch mode (at configurable intervals/transactions) in accordance with the Approved ICD.		
	· Interface to the existing CSC/VPC system: The Cashless Toll Host System shall have the capability to transmit AVI transactions to the existing CSC/VPC system in real time and in batch mode (at configurable intervals/transactions) in accordance with the Approved ICD.		
	· Interface to the image server(s): The Cashless Toll Host System shall track and reconcile image transmission and transfer status.		
	· Interface to SAP: The Cashless Toll Host System shall transmit monthly toll transaction, account, and other GL files received from the CSC/VPC system. Interface to SAP shall be further defined during the Design phase.		
	· Interface to the MOMS: The Cashless Toll Host System shall interface with the MOMS to transmit alarms and Cashless Toll Host System operational status including recovery messages.		
	· Interface between the MOMS and the current Commission diagnostic monitoring system, based on the Approved ICD.		
347	The Cashless Toll Host System shall receive a comprehensive TSL from the existing CSC/VPC system once a day and incremental TSL/updates not more frequently than every sixty (60) minutes (configurable).		
348	Toll rate tables shall be transmitted to the CSC/VPC when rate changes are initiated on the Cashless Toll Host System.		
2.2.3.2	**Version Tracking Requirements**		
349	The Cashless Toll Host System shall maintain records of the last 20 versions of the TSL, toll rate tables, VEL (if exercised), UIL, and lane configuration files that it received and/or created and that were successfully downloaded to the lanes. Receipt of files from the existing CSC/VPC system, their version, time of receipt and processing status shall also be tracked.		
350	Reports and screens shall be made available to verify the versions and the file download status. Failure in the transmission of any data to a lane shall result in a failure message being logged and reported to the MOMS.		
351	The system shall provide the capability to track the versions of lane executable programs installed at each toll zone location.		
2.2.3.3	**Transaction Audit and Verification**		
352	The Cashless Tolling System shall perform an independent automatic audit and verification process that confirms all vehicles traveling through the toll lane are detected and reported as transactions; all transaction transmissions between the zone controller and Cashless Toll Host System are successful and the System has the screens and reports to validate the audit trail.		
353	If the validation process fails for any reason, failure messages shall be created and reported to the MOMS. If the audit process determines that vehicles or transactions are missing, the missing information shall be identified and reported to the MOMS.		
354	If the audit process is successful then the audit for the location for the Revenue Day shall be deemed "complete" and System shall track this status of the audit on reports.		
355	Once the Revenue Day is "complete" the data reported for that day should not change. Any condition for example toll waiving that result in changes to the data shall be identified and Authorized Users alerted.		
2.2.3.4	**Data Summarization**		
356	During the Design process and based on Commission Business Rules and reporting requirements, the system shall perform data summarization.		
2.2.3.5	**Diagnostics**		
357	The Cashless Toll Host System shall provide self-diagnosis functions to detect and report on the status and functioning of the Cashless Toll Host System Hardware devices; third party Software; communications; processes; tasks, and Software applications, as defined in the Commission Approved Design Document.		
358	All Hardware and Software failures detected shall be reported to the MOMS.		
2.2.3.6	**Data Security**		
359	The Contrator shall ensure that any transactional data records, once entered into the System, cannot be deleted or changed.		

Functional Requirements			
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360	Data records and files shall only be appended to and not edited or deleted as determined by the Commission during the Design phase.		
361	All System access/entry, logins, and modifications (for example, flagging actions) shall be recorded and unauthorized access shall be prevented, logged and reported to Commission IT Security within 12 hours of detection.		
2.2.3.7	**Transaction Pre-processing**		
362	The Cashless Toll Host System shall ensure all transactions transmitted to the existing CSC/VPC system comply with the ICD specifications and Commission Business Rules.		
363	The Cashless Toll Host System shall pre-process all transactions in accordance with the Approved Business Rules in order to filter incorrect transactions that may result from Equipment failures and lane logic issues.		
364	Transactions that should not be processed further at the existing CSC/VPC system shall be identified and flagged prior to transmission and then transmitted to the existing CSC/VPC system as defined during the Design phase.		
365	The Cashless Toll Host System shall identify exceptions, anomalies and other conditions determined during the Design phase in the event they have not been filtered at the zone controller, for example, same transponder read within configurable conditions.		
366	In scenarios where multiple transponders with valid status are reported, all transponders can be transmitted to the existing CSC/VPC system and the existing CSC/VPC will post the transaction in accordance with Commission Business Rules.		
367	In cases where there is a Transponder read data and a video transaction created for a vehicle (in case of Buffered Transponder Reads or lane logic issues) the Cashless Toll Host System shall identify the transaction that needs to be terminated based upon configurable parameters Approved during the Design phase. In case of Buffered Transponder Read transactions, the Transponder read time shall be used as the transaction time.		
368	Based on the results of the pre-processing, an Exception List shall be generated and transmitted to the existing CSC/VPC system in accordance with the Approved ICD that identifies video transactions that needs to be terminated at the existing CSC/VPC system and further processing on these transactions stopped.		
369	Alarm messages shall be created and reported to the MOMS in the event such exceptions identified in this section exceed a configurable threshold.		
2.2.4	**Cashless Toll Host System Application Software**		
370	The Contrator shall develop, furnish, and install a single, role-based, GUI application Software for the Cashless System that supports all user functions for the Cashless Toll Host System, including the MOMS and DVAS.		
371	Based on the user's access privileges obtained from Active Directory the appropriate menus, screens, tabs, reports and other system functionality shall be made available.		
372	Changes to the System data and parameters shall be through screens and only Authorized Users shall have access to these screens.		
373	All access to the application and changes to the data shall be recorded and tracked, and the System shall provide an audit trail for all data modifications and parameter changes.		
374	Authorized Users shall have access to the data modifications and parameter changes initiated by users.		
2.2.4.1	**Graphical User Interface (GUI) Requirements**		
	The GUI design must include accepted industry design standards for ease of readability, understanding and appropriate use of menu-driven operations, user customization and intuitive operation.		
375	The Contrator shall meet all Commission IT Security standards and practices in the design of the GUI for the Cashless Toll Host application.		
376	The GUI design and development shall incorporate human factors and usability engineering and be optimized for speed, as well as provide the following controls, including but not limited to:		
	· menus (such as pull down, popup, cascading, leveling, etc.);		
	· windows (allowing for multiple windows within the application, such as to navigate back without having to re-enter information)		
	· informational messages;		
	· positive feedback;		
	· exception handling and error dialogs, including logging the error;		
	· control icons, links and action buttons;		
	· data entry fields, combo boxes, check boxes;		
	· display (read-only) fields, and		
	· general and context-specific help menus.		
377	Data entry screens shall have configurable mandatory fields that require data entry prior to continuing through the process.		
	Provide field-level validation (server-side enforced) and format verification upon exiting data fields applicable to pre-defined formats or standards, including but not limited to:		
	· alpha-numeric;		
	· date;		

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378	· time;		
	· special characters;		
	· length;		
	· lane and plaza ID, and		
	· Transponder numbers.		
379	Provide other formatting masks (server-side enforced) as configured by the System administrator (visible to certain users but masked for other users), which can be applied to any other field in the GUI.		
380	Provide field-level "tooltips" or other interactive help, Configurable by the System administrator, that provide specific guidance on any field presented, including but not limited to:		
	· alpha-numeric fields;		
	· date fields;		
	· time fields;		
	· special characters;		
	· username and password;		
	· length restrictions;		
	· lane and plaza ID, and		
	· Transponder fields.		
381	Online help shall be provided for each screen, each editable field and each selectable option within each screen.		
2.2.4.2	**Screens and Report Access**		
382	Provide the capability to assign users access privileges to System reports based on user level/role, as determined by the Commission during the Design phase, to the Cashless Tolling System application.		
383	Provide the capability to assign read-only rights to roles so that users belonging to that role will not be allowed to enter any data.		
384	Provide the capability for Authorized Users to maintain roles and permission access to the System.		
2.2.4.3	**Cashless Tolling System Screens and Reports**		
385	All data entered or generated in the System shall be retrievable (on-demand and scheduled) through reports and screens.		
386	Reports menu shall be organized by category of reports and shall be intuitive to users and easily accessible based on user access.		
387	Data shall be summarized to improve report generation performance and to track changes in data for as-of-date reporting.		
388	Reports and screens available through the System shall have various selection, group by, and sort criteria, and shall be easily configurable.		
389	The location selection criteria shall include but not be limited to District, Highway, tolling point, lane, and direction of travel to be defined during the Design phase.		
390	Provide the capability to generate the same report by hour, day, date range, weekly, monthly, quarterly, yearly (fiscal and calendar), year-to-date and comparative.		
391	Provide the capability to present report data as an accumulation or individually for the selected criteria. This capability shall be configurable and applicable to District, Highway, Cashless Toll Plaza, and different transaction types whereby the user can choose the data to be presented as an accumulation of, for example grouped by all Cashless Toll Plazas and/or payment types or as individual Cashless Toll Plazas and/or payment types.		
392	Reports developed shall allow the Commission to audit and reconcile data transmitted between various subsystems within the Cashless Tolling System, and with the PTC Toll Host system and existing CSC/VPC system in accordance with this Scope of Work.		
393	Provide ad-hoc reporting tool capabilities to Authorized Users to allow the creation and execution of custom reports, including but not limited to:		
	· drag-and-drop field functionality;		
	· drill down functionality;		
	· filtering;		
	· parameter prompting;		
	· formula support;		
	· grouping;		
	· sorting, and		
	· stored procedure and function support.		
394	The ad-hoc reporting tool shall be COTS Software and be the latest version at the time of Acceptance testing and field-proven to operate in a transaction intensive environment.		
395	The ad-hoc Software shall be compatible with operating system standards and shall be patched and upgradeable to new versions of the Software and operating system.		
396	Ad-hoc report templates created by Authorized Users shall be saved and made available to all Authorized Users.		

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397	All reports shall show the status of the validatioNAudit process, as defined by the Commission and other relevant statuses that indicate items, including but not limited to whether:		
	· all data has been obtained from the lanes;		
	· the data has been re-summarized;		
	· the transactions have been transmitted to the existing CSC/VPC system, and		
	· the report is complete.		
398	The time of the last transaction processed shall be included in all applicable reports to assist with the reconciliation and audit.		
399	Once the audit process is completed and Revenue Day is closed, the data on reports for the day shall not change unless data is re-summarized.		
400	All reports shall include individual totals, sub-totals, and grand-totals as appropriate.		
401	Reports shall have the capability to select the date type, including but not limited to:		
	· revenue date;		
	· transmission date;		
	· as-of date;		
	· process date;		
	· transaction date, or		
	· a combination thereof, as designated by the Commission.		
402	Reports shall use conditional formatting to identify exceptions and data that are outside the normal trend.		
403	Provide reporting output in various formats (both compressed and uncompressed), including but not limited to:		
	· Portable Document Format (PDF);		
	· plain text format (TXT);		
	· rich text format (RTF);		
	· Microsoft Excel (2010 version and later);		
	· delimiter-separated values;		
	· hypertext markup language (HTML), and		
	· extensible markup language (XML).		
404	A report generation feature shall be available for configuration and shall permit Authorized Users to request selected reports for auto delivery by email or to a designated server according to a routine or custom interval, such as the start of the Business Day or at other appropriate times as designated or requested by the user as determined in the Design phase.		
405	Data from summary reports scheduled to run daily shall be automatically exported daily to a specified file format and made available on the Commission designated server as defined during the Design phase.		
406	Capability shall be provided to drill down all high-level reports to the next level of detail and to event level details as required as defined in the Design phase.		
407	Authorized Users shall have the capability to display and review the LPICPS images and DVAS video and event details associated with the selected transaction from the drilled down details.		
408	Authorized Users shall have the capability to view the contents of files that are received by the Cashless Toll Host System and transmitted by the Cashless Toll Host System in a readable format. If files are compressed or encrypted, the necessary Software tools shall be provided to view their contents. If the user selects a specific file, the contents of the file shall be displayed and the user shall have the ability to save the contents at minimum as a .csv file, xml, txt and in a useable Excel format as Approved.		
409	Capability shall be provided to present data in graph forms and chart types and the user shall be able to select presentation form from a variety of graphic styles.		
410	Data shall be organized and summarized in a manner to allow for report generation within no more than two (2) seconds for daily reports, and no more than twenty (20) seconds for monthly and annual reports, of a report generation request.		
411	The Contrator shall support the creation of additional reports and/or the modification of implemented reports, as needed after the initial deployment and implementation of the System. . It is anticipated that no more than one hundred (100) additional reports will be required for the term of the Contract.		
2.2.4.4	**Cashless Toll Host Reports**		
	Existing Host reports are included in Attachment 9: Existing PTC Host Reports for reference.		
412	The Cashless Tolling System shall provide reports to audit and reconcile the System, provide traffic and revenue trends, validate System performance and perform historical reporting on detailed and summarized data imported from the existing PTC Toll Host.		
413	Report Designs and templates shall be presented by the Contrator and reviewed by the Commission during the Design phase and Approved.		
Transaction and Revenue Reports			

Functional Requirements			
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414	Transaction Summary Reports: These reports show daily, weekly, monthly, quarterly, yearly, and comparative transaction and revenue, by vehicle class and payment type. Transaction and revenue reports shall be summarized and detailed. The summary data shall drill down to the Transaction Detail Report.		
415	Transaction Detail Report: The transaction details shall be provided in this report including lane status, equipment status, transaction status and various lane flags. Users shall be able to access the bit descriptions in all cases where information is coded. The report shall be used to investigate discrepancies and issues.		
416	Accounting Revenue and Associate Traffic Report: This report shows accounting revenue and traffic counts by Revenue Dates for the vehicle class categories.		
417	Bedford/Breezewood Special Report: The report shows monthly traffic and revenue counts for current year and previous year usage for travel between Bedford and Breezewood. Sub-totals and grand totals provide a breakdown by transaction type, for example E-ZPass, Video and Non-Revenue and are grouped by vehicle class.		
418	Class Report: This report shows information related to traffic and revenue by vehicle class by transaction types, for example E-ZPass, Video and Non-Revenue This report is used by management and operations to report on traffic and revenue by vehicle class.		
419	Executive Summary Traffic and Revenue Report: This report shows daily traffic counts and revenue amounts by revenue category, for example E-ZPass and Video by vehicle class category, grouped by shift, selected day totals, previous day totals, percentage of increase/decrease and month to selected day totals. This report is used to show the increase and/or decrease in traffic counts and revenue compared to the previous days' totals using the breakdown by revenue types. Data in this report shall also be represented graphically to include selected day traffic and revenue statistics; daily revenue and traffic comparisons by vehicle class and revenue type including selected day; previous day; month to selected day average and prior week day. Backup of the summary data by District and tolling point shall be included.		
420	Finance Traffic and Revenue Details Report: This report shows traffic and revenue counts by tolling point and is grouped by vehicle class categories for the specified highway(s) selected. This report provides operations and management with traffic and revenue totals for each tolling point by vehicle class categories for a specified date range.		
421	Traffic and Revenue Report: This report shows transaction by transaction type, for example E-ZPass, Video and Non-Revenue for tolling points in each District for the selected highway(s). The data is grouped by vehicle class categories and tolling point. A summary is provided at the end of the report by vehicle class category and transaction type.		
422	Traffic and Revenue Comparison Report: This report shall provide a comparison of current year monthly traffic and revenue data with the previous year with percentage increase/decrease and includes selected highway(s) by district and tolling point. Similar to the traffic and revenue report above, the report includes a breakdown by vehicle class category. The report is further divided into sub-groups by revenue category, for example E-ZPass and Video.		
Traffic Reports			
423	Average Lane Throughput Report: This report shall display hourly traffic volumes for each lane grouped for each tolling point within the selected District. Hourly traffic volumes shall be totaled by lane for the day for each tolling point to calculate the average lane throughput at each tolling point.		
424	Counts and Percentages Report: This report shall display vehicle counts and percentages of each count grouped by vehicle class category and vehicle class for each revenue category for example E-ZPass and Video for each tolling point. This is a daily report and is grouped by tolling point for the selected highway(s) and district. This report shall drill down to the Counts and Percentages by Direction Report.		
425	Counts and Percentages by Direction Report: This report shall display vehicle counts and percentages of each count grouped by vehicle class category and vehicle class for each revenue category for example E-ZPass and Video for each tolling point. This is a daily report and is grouped by tolling point and direction for the selected highway(s) and district.		
426	Lane Traffic Counts and Statistics Reports: This report shall provide AM and PM traffic counts and statistics by hour for each Highway and tolling point by revenue category for example E-ZPass and Video. The report shall also include AM and PM peak hour statistics and provide a grand total by revenue category for all peak hour. The total percentage of E-ZPass transactions with the AM/PM breakdown and identification on the E-ZPass high hour and lane shall be included.		
427	Finance Traffic Details Report: This report shall display traffic counts grouped by tolling point and vehicle class category and include grand totals for each vehicle class category.		
428	Plaza By Lane Report: This report shows traffic counts by lane for each tolling point by vehicle class categories and vehicle classes. This report includes the summary by tolling point for the selected District. This report is used by operations staff in analyzing traffic volumes by lane and vehicle class.		
429	Market Penetration Report: This report shows traffic counts by revenue category, for example E-ZPass and Video for AM/PM peak hours and includes the E-ZPass penetration percentage.		

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430	Speed Reports: This report shows the traffic count information per lane by speed segments. This report is used by operations staff to monitor traffic flows and speeds.		
431	Traffic Counts Report: This report shows traffic count information grouped by revenue category for example E-ZPass and Video with breakdown by transaction types and sub-totaled by tolling point and vehicle class categories. The combined counts include a breakdown by revenue and nonrevenue transactions. This report shall drill down to the Traffic Counts by Direction Report.		
432	Traffic Counts by Direction Report: This report shows traffic count information grouped by c revenue category for example E-ZPass and Video with breakdown by transaction types and sub-totaled by tolling point, direction and vehicle class categories. The combined counts include a breakdown by revenue and nonrevenue transactions.		
433	Vehicle Count Through Closed Lanes Report: This report shall display tolling point, lane and detailed transaction information for vehicles that travel through a closed lane based on the date range, tolling point and lane.		
434	Vehicles and Mileage Report: This report shows traffic counts for all vehicle classes in addition to vehicle class category for each revenue category between tolling points and total distance traveled for the selected criteria. The report includes a summary page with traffic between tolling points and total miles traveled. Each summary shall be grouped by vehicle class category and revenue category, for example E-ZPass and Video.		
System Audit Reports			
435	Transaction Audit Report: This report shows the status of the transaction transmission from the zone controllers to the cashless tolling host, the audit status, the failed transactions, duplicate transactions, all exceptions, and missing transaction sequence numbers at each of the tolling points. The communication status between the zone controllers to all of the subsystems shall be displayed. The report shall also include the date the transactions were received at the Cashless Toll Host and the days lagging. It also shows the transmission status of the transactions to the PTC Toll Host system.		
436	System Audit Trail Reports: Weekly and monthly reports shall be made available that show the modifications made by the users to system parameters and ability shall be provided to obtain the details of the modifications.		
437	System Exceptions Report: The System Exceptions report shall display transactions that are considered exceptions, including but not limited to duplicate transactions; dual transponders; Cashless Toll Host filtered transactions and non-interoperable transponder reads. Exception handling errors and the disposition of these exceptions shall also be displayed along with the transaction.		
438	Image Reconciliation Report: The Image Reconciliation report shall provide the ability to match transactions by type to images and to help identify missing images. These reports shall not only reconcile the actual images saved to what was expected but also verify that the images were successfully transmitted from the lanes to the image server(s) and on to the CSC/VPC system. Data on this report shall match other transactions summary reports. This report shall drill down to the Image Reconciliation Detail Report.		
439	Image Reconciliation Detail Report: This operational report list the information on the video transaction for a user defined transaction date/time range. Capability shall be provided to show only records where an image is expected and if the image is expected if the image has arrived yet.		
440	Transactions Reconciliation Reports: Yearly, quarterly, monthly, weekly, and daily reports that show AVI and video transaction transmission reconciliation for all of the tolling points. These reports shall validate that all of the AVI and video transactions received from the lanes were posted to the Cashless Toll Host System and transmitted to the PTC Toll Host system. Reports shall be available by transaction day and transmit day, and transmit day reports shall show the files transmitted and acknowledged by the receiving system.		
441	Fare Schedule Report: This report shall provide the fare schedule for the selection criteria. The fare amount for each vehicle class will be displayed by tolling point for the effective date selected. The report shall be used by operations and management staff to verify future, current and past versions of released and unreleased fare schedules based on the effective date selected. Historical fare information shall be used in determining future changes in fares. It may also be used to reconcile past transactions amounts.		
442	Hardware Status Report: This report shows the Hardware status codes and descriptions based on the selected date range, Highway, District, Plaza, Lane and type of Hardware failure. This report allows maintenance staff to audit the state of all Hardware components in the lanes.		
443	Transaction Number Gap Report: This report shall provide information on gaps in transaction numbers based on tolling point and lane for the specified date range.		
444	Unusual Occurrence Report: This report shall be used to provide operations and maintenance staff with information regarding unusual occurrences with lane data to identify potential Hardware issues, Software issues or other system anomalies. The report shall include the Highway(s), and tolling point and may be filtered by unusual occurrence (UO) code. This report includes lane number, transactions date and time, lane status transaction number and a description of the UO.		

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445	Lane Operations Report: This operational report lists and summarizes vehicle transactions and equipment messages that are generated in the lanes. This report is an audit tool that presents all lane activity for a specified location and desired transaction date and time period. Numerous selection and filter criteria shall be provided to help identify problems. Detailed information regarding the transaction and event shall be included.		
446	Transponder Audit Report: This report verifies that transponders are properly read at each cashless tolling location		
Performance Reports			
447	Transponder Status List Transmission Report: The TSL Transmission report shows the status of the TSL transmissions to the Cashless Toll Host System and to all of the zone controllers. Summary information related to the number of transponders, time acknowledged by the zone controller and other data shall be provided to verify results and performance requirements. Time of receipt from the existing CSC/VPC system, time of transmission to the zone controllers and the status of the transmission shall be displayed. Lanes not compliant to the requirements shall be identified.		
448	Image Transmission Summary Report: This operational report counts the number of images created in the lanes for a user defined image created date range and other criteria. Data displayed include the number of triggered, non-triggered and total images from the lanes and the date the images were received at the image server(s). For each received date, the total images, number of lag days, the percentage of transactions received each day and a cumulative percentage shall be included.		
449	Image Transmission Detail Report: This operational report lists information on images from the lanes for a user defined lane created date. Capability shall be included to show image records where it took longer than a user defined number of hours for the image to arrive at the image server(s).		
450	File Transfer Performance: This operational report lists files that have been created and sent from the Cashless Toll Host System by component for either the created date range or sent date range selected by the user. Information displayed include, file information, created date and time, sent date and time and process time. This report verifies System compliance to performance requirements. File/data transmissions to the lanes shall include confirmation of successful delivery at each lane.		
451	OCR/ALPR Performance Report (if the option to implement OCR/ALPR is exercised): The OCR/ALPR Performance Report shall display OCR/ALPR performance statistics by jurisdiction. Problematic cashless tolling lanes, Plazas and jurisdictions shall be identified. The report shall include a breakdown of the OCR/ALPR performance by confidence levels.		
2.2.4.5	**Cashless Tolling Dashboards**		
452	The Contrator shall provide Dashboards developed during the Design phase to monitor the cashless tolling system. The Dashboards shall include but not be limited to real-time monitoring of tolling point traffic, maintenance data and system performance monitoring.		
453	The Contrator shall provide the capability for Authorized Users to monitor the real-time activity at all tolling points in a pictorial and Dashboard view. There shall be an overview representation of all the highways from which individual highways can be accessed.		
454	The Contrator shall provide Authorized Users the capability to view real time DVAS video and also playback recorded video via the Dashboard. The event data pertaining to the vehicle in the video shall be displayed on the video.		
455	Authorized Users shall have access to the detailed data directly from the pictorial and Dashboard view.		
456	Authorized Users shall have the capability to drill down to each lane to review and monitor detailed events as they occur for each transaction.		
457	Authorized Users shall be able to easily maneuver through screens and view data, and different colors and pictures shall be used to bring critical events to the user's attention.		
458	Summary data by payment type for all Commission toll facilities and by tolling point shall be displayed and users shall have the ability to drill down to the details. If a specific tolling point is selected, transaction and event level data by lane shall be made available and users shall have the ability to view the DVAS real-time video and video transaction images through this screen.		
459	All priority 1 alarms shall be displayed in color and shall be audible to direct attention to the failure.		
460	Authorized Users shall be able to easily identify problems (traffic or Equipment) on the cashless tolling lanes and initiate MOMS work order from this interface.		
461	In addition, the Dashboard shall provide detailed real-time information about the AVI system performance, the AVC system performance, and the LPICPS performance to assist in diagnosing and investigating problems. Data pertinent to traffic monitoring and Maintenance shall be displayed in real-time.		
2.2.4.6	**Remote Operations**		
462	The System shall provide the ability to allow Authorized Users to remotely operate the cashless tolling lanes to support the Commission operations, including but not limited to:		
	· remote update of security patches and Software updates;		
	· download TSL, VEL (if exercised), and any files required to selected zone controllers when there are issues, and		

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	· restart a specific zone controller node.		
2.2.4.7	**User Setup and Maintenance Screen**		
	User setup and maintenance is a critical task since the employee access levels/roles created through the System determines what privileges and access rights each employee is granted.		
463	Access to the zone controllers and Cashless Toll Host System including the MOMS and DVAS functions shall be controlled through the user setup interface.		
464	The user list shall be obtained from the Commission Active Directory maintained by Commission IT or from an Approved source at regular intervals as defined during the Design phase.		
465	An operations alert shall be generated each time a new user is detected so that their user roles can added and access to the System defined.		
466	Authorized Users shall have the capability to also create new users through the System.		
467	Through a user setup and maintenance screen, the users shall be designated various access levels/roles based on their responsibilities (job description).		
468	In the Design phase access levels/roles shall be created and the System shall allow the input and editing of generic job access levels/roles.		
469	The access rights of each role and the ability to add roles and users shall be defined by the Commission during the Design phase.		
470	The user setup and maintenance screen shall be also used to activate and inactivate employees and also terminate them from the System.		
471	The same screen shall also be used to assign and update User ID and PIN/password for access to applications.		
472	Passwords assigned to employees and the password management process shall meet current Commission policy standards.		
473	As soon as the information is saved, the UIL shall be transmitted in near real-time to the various Systems for immediate user access.		
2.2.4.8	**Toll Rates and Schedule**		
474	The System shall provide Authorized Users the capability to create and manage toll rates and schedules.		
475	At a minimum, capability shall be provided to establish toll rates based on Highway, tolling point, vehicle class, and payment type and shall support time of day and holiday toll rates as defined during the Design phase.		
476	Authorized Users shall have the capability to pre-establish the effective date/time the toll rates will be enabled. The System shall permit the Commission to schedule toll rates and changes in toll schedules in advance of the new rates becoming effective.		
477	Authorized Users shall have the capability to establish a default toll rate to be used in the event of data unavailability or other conditions as determined by the Commission that would warrant the use of the default toll rate.		
478	The System shall record and track the toll rate ID and toll schedule ID and their transmission status for audit purposes.		
2.2.4.9	**Configurable Parameters**		
	All parameters changes shall be Approved by the Commission in accordance with the Commission Engineering Change Order (ECO) Process.		
479	The System shall provide the capability for Authorized Users to modify the configurable System parameters.		
480	Any change shall result in the creation of a new configurable parameter set and each change shall be identified by a unique identifier.		
481	Changes to configurable parameters can be scheduled to take effect immediately or at a scheduled time as determined by the user.		
482	The System shall record and track all changes to configurable parameters for audit purposes.		
483	When a new parameter takes effect, a notification shall be generated and reported to the MOMS.		
2.2.4.10	**Zone Controller Executable Download**		
	All Software changes shall be Approved by the Commission in accordance with the Commission Engineering Change Order Process.		
484	The System shall have the capability to download zone controller executable files and all other files required by the lane for its operations. All Software updates shall be coordinated with the Commission.		
485	Successful download of the files shall be verified and alarm messages generated if any file was not received by any zone controllers.		
486	Where possible, once the Commission has Approved a Software release, all System application updates shall be automated requiring no action by Maintenance personnel.		
2.2.5	**General Requirements for Interfaces**		

Functional Requirements			
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	The Contrator is responsible for working with the Commission and the existing Contrators in Designing, developing, documenting, testing and implementing all required interfaces. Electronic interfaces are required to provide connectivity between the existing PTC Systems (PTC Toll Host and CSC/VPC), the Cashless Toll Host System and In-lane Systems. The Contrator shall be responsible for developing the ICDs, and where changes to existing ICDs are required, these documents shall be modified by the Contrator as part of this Scope of Work based on the Contrator solution during the Design phase. The ICDs shall include requirements for data format and transmission, criteria for acknowledgement and validation of transmitted data and procedures for recording and reconciliation, as appropriate for each interface. It is expected that the latest version of the ICDs will be implemented at go-live and that the Contrator shall continue to update the ICDs as appropriate for the life of the Contract.		
487	Provide electronic automated interfaces to the existing systems in accordance with these requirements.		
488	Provide for guaranteed transmission of data for all interfaces.		
489	Provide for one hundred (100) percent reconciliation of the transmitted data and files.		
490	Provide the capability for Authorized Users to access and view the contents of files, including compressed or encrypted files, which are received and transmitted by the Cashless Toll Host System in a readable format. Authorized Users shall have the capability to save the contents of such files.		
491	Provide the capability for real-time alerting to the MOMS of interface and data transmission failures, including but not limited to:		
	· MOMS Dashboard for managing and monitoring interfaces;		
	· workflow user interface for managing and monitoring steps within each interface;		
	· status and history of executions;		
	· comprehensive scheduling of file transmissions;		
	· comprehensive reporting for inbound and outbound transmissions;		
	· tight integration with the MOMS and notification of failed transmissions;		
	· notification of file transmission and receipt status, and		
	· capability to manually execute a failed transmission.		
492	The Contrator shall utilize secure Protocols Approved by the Commission for the transfer of data and/or files via interfaces defined during the Design phase.		
493	Provide the capability to transmit and receive multiple files during each scheduled batch.		
494	Provide the capability to transmit and receive multiple files in a day.		
495	Utilize file naming conventions that prevent the overwrite of data and/or files. For example, include the date and time of transmission and provide for unique identifiers.		
496	Utilize file handling and processing methods that provide a complete log of the data and/or file transfer process. For example, files that are successfully processed are moved to a processed folder.		
497	Validate records and identify errors in the received data and/or files, including but not limited to:		
	· mandatory fields;		
	· data formats;		
	· data validity (such as tolling points and lane numbers);		
	· duplicate records;		
	· unexpected response;		
	· checksum/record count verification and		
	· incorrect status.		
498	Provide the capability to correct and re-transmit data and/or files.		
499	Provide the capability to process re-transmitted data and/or files automatically or manually by Authorized Users as determined during the Design phase.		
500	Provide the capability to transmit the error details to the transmitting entity, as well as record it in the MOMS.		
501	Provide the ability to identify missing records/transactions/images and request the transmission of such missing records/transactions/images.		
502	Reconcile the transmitted records to the records received and accepted by the receiving entity.		
503	Provide the means to identify interface issues by validating the file transmission process, including but not limited to:		
	· creation and transmission of data and/or a file at the scheduled time, even if there are no records to transmit;		
	· determination if the data and/or a file was transmitted or received at the scheduled time;		
	· creation of alerts to the MOMS if data and/or a file was not created or received at the scheduled time;		
	· creation of alerts to the MOMS if received data and/or a file was not acknowledged;		
	· creation of alerts to the MOMS if records in the received data and/or file had errors when processed;		
	· provide details in real-time to the MOMS of each failed record and		
	· creation of alerts to the MOMS when a response has not been received for individual records within the expected duration.		
504	Provide data and/or file transmission and reconciliation reports as described in these requirements.		

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505	Provide a Dashboard that tracks the progress of data and/or file transmissions through each stage and their acknowledgements by the receiving entity, including but not limited to:		
	· transactions eligible for transmission;		
	· file and/or data created with file name;		
	· file and/or data transmitted;		
	· file and/or data received;		
	· file and/or data accepted;		
	· file and /or data rejected;		
	· file and/or data re-transmitted;		
	· number of records in the file and/or data set and		
	· number of failed records.		
506	Provide the capability for Authorized Users to configure the relevant parameters related to file and/or data transmission for each interface.		
507	Monitor the disk capacity where files and/or data are deposited and send an alert to the MOMS and interfaces entities (if applicable) if folders are near capacity (configurable) or full.		
508	Provide the capability to automatically archive successfully processed data and/or files after a configurable number of days.		
509	Provide the data to reconcile file transmissions.		
510	Conform to any existing ICDs, including any updates required at the time of Design and develop all new ICDs that have been identified as "to be developed". It is the Contrator's responsibility to ensure all ICDs (including existing) are accurate, updated and meet the requirements of the Scope of Work before developing the interfaces.		
2.2.5.1	**Cashless Toll Host System to SAP Interface (Optional)**		
511	The Contrator shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system.		
512	The Contrator shall provide the capability to validate that the received files were successfully transmitted to SAP.		
2.2.5.2	**Cashless Toll Host System Interface to the Existing PTC CSC/VPC System**		
513	The Contrator shall design and develop an interface from the Cashless Toll Host System to the existing CSC/VPC system to transmit receive and acknowledge one hundred (100) percent of all transactional and financial data in accordance with the Approved ICD developed during the Design phase.		
514	The interface shall be capable of receiving the following financial data from the existing CSC/VPC system for transfer including but not limited to:		
	· monthly GL data feeds sent from the CSC/VPC;		
	· monthly CSC surety files, and		
	· monthly CSC tag and account files.		
515	The interface shall be capable of transmitting AVI transactions, Exception List, Non-Revenue License Plate List and toll rates to the existing CSC/VPC system.		
516	The interface shall be capable of receiving TSL and VEL (if option is exercised) files from the existing CSC/VPC system.		
517	The Contrator shall provide the capability to positively acknowledge (ACK) message receipt, negatively acknowledge or reject a message (NACK) and reconcile data transmissions to/from the Cashless Toll Host System.		
2.2.5.3	**Cashless Toll Host System Interface to the Existing PTC Toll Host System**		
518	The Contrator shall design and develop an interface from the Cashless Toll Host System to the PTC Toll Host system to transmit one hundred (100) percent of all transaction in accordance with the ICD to be developed for this interface during Design.		
519	The interface shall be capable of transmitting the following data including but not limited to:		
	· transaction records and		
	· alarms.		
520	The Contrator shall provide the capability to reconcile the successful transmission of the summary data to the PTC Toll Host system.		
2.2.5.4	**Cashless Toll Host System to Facility Server Interface**		
	The provision of a facility server is optional but if the Contrator's solution includes a facility server, then the requirements in this section shall be met.		
521	The Contrator shall design and develop an interface from the Cashless Toll Host System to the facility Servers (if applicable) to transmit, receive and acknowledge one hundred (100) percent of all data in accordance with the Approved ICD.		
522	The interface shall be capable of sending TSL, VEL (if option is exercised), configuration files, Software updates and toll rates (if applicable) to the facility servers.		
523	The interface shall be capable of receiving all transactions, alarms and event messages from the facility servers.		

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524	The Contrator shall provide the capability to reconcile the successful transmission and receipt of all data at the Cashless Toll Host System.		
2.2.5.5	**Cashless Toll Host System to Zone Controller Interface**		
525	The Contrator shall design and develop an interface from the Cashless Toll Host System to the zone controllers to transmit and acknowledge one hundred (100) percent of all data in accordance with the Approved ICD.		
526	The interface shall be capable of sending TSL, VEL (if option is exercised), configurations files, Software updates and toll rates (if applicable) to the zone controller.		
527	The interface shall be capable of receiving all transactions, alarms and event messages from the zone controller.		
528	The Contrator shall provide the capability to reconcile the successful transmission and receipt of all data at the Cashless Toll Host System.		
2.2.5.6	**Image Server to Cashless Toll Host System Interface**		
	Reconciliation of images to the video transactions and the status of the transfer of images and video transactions shall be maintained and reported at the Cashless Toll Host System.		
529	The Contrator shall design and develop an interface from the image server(s) to the Cashless Toll Host System to transmit and track the status of the capture of images by the In-lane Systems for each video transaction and the subsequent transfer of images and video transactions to the existing CSC/VPC system.		
530	The interface shall be capable of sending image reconciliation and transfer status data to the Cashless Toll Host System.		
531	The Contrator shall provide the capability to reconcile the successful transmission and receipt of all images and video transactions at the existing CSC/VPC system.		
2.2.5.7	**MOMS Interface to the Existing Commission Monitoring System**		
532	The Contrator shall design and develop an interface from the MOMS to the current Commission monitoring system in accordance with the ICD to be finalized during Design.		
533	The Contrator shall provide the capability to generate MOMS alarms and work orders based on status received from the monitoring system.		
2.2.6	**Maintenance Online Management System (MOMS)**		
	There shall be a Maintenance Online Management System (MOMS) that supports the Cashless Tolling System Maintenance activities and Maintenance operations.		
2.2.6.1	**Maintenance Online Management System (MOMS) – General Requirements**		
534	Provide a MOMS that supports Maintenance operations for all Software and Hardware provided under this Contract.		
535	Provide a MOMS that monitors, alerts and generates work orders in real-time for all processes, including but not limited to:		
	· communications issues;		
	· file transmission issues;		
	· data exceptions;		
	· Hardware issues;		
	· Software issues or failures;		
	· database issues;		
	· issues with jobs, processes or data flows;		
	· low storage space for each subsystem (configurable thresholds);		
	· CPU utilization (configurable thresholds);		
	· CPU load (configurable thresholds);		
	· file system mounts (if applicable), and		
	· disk IOs.		
536	Provide a MOMS that monitors, alerts and tracks in real-time unusual activity triggered by users and systems, including but not limited to:		
	· video transactions above threshold;		
	· flushed transactions above threshold, and		
	· other anomalies in daily toll operations.		
	Provide a MOMS that includes but is not limited to the following:		
	· receiving and monitoring status messages of all system Hardware and Software;		
	· receiving and transmitting alarm and status messages from the current Commission monitoring system;		
	· is capable of local work order manual entry or email entry by Authorized Users;		
	· storing data in a relational database to allow for data recovery and flexibility in reporting the raw data (including via Ad-hoc reporting);		
	· tracking device failures and service requests;		
	· assigning priorities and actions to events;		
	· notifying (automatically) Maintenance personnel via reports, text and email;		
	· assigning work orders to Maintenance personnel;		

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537	· reassigning (manually) work orders to other Maintenance personnel;		
	· escalating (automatically) work orders to other Maintenance personnel;		
	· recording time of acknowledgement by Maintenance personnel;		
	· recording time of acknowledgement by all subsequently assigned Maintenance personnel;		
	· recording time of repair;		
	· recording time of Equipment and process recovery;		
	· recording completion of service calls;		
	· providing automatic alert for work orders not closed out in specified time;		
	· maintaining and tracking Repair Maintenance Activity;		
	· accepting and updating work orders via smart phones entries via secure communications;		
	· tracking all system application Software components and Hardware via an asset management module;		
	· role-based security;		
	· containing an automatic system exception reporting for all processes that are not running;		
	· containing an automatic system workflow exception reporting for all items that are not processing correctly or are hung in the system, and		
	· providing hard copy reports on device failures and trouble resolution status.		
538	Provide a MOMS that interfaces with the Commission SAP to exchange work order creation and disposition data, and Equipment inventory data as defined during the Design phase.		
539	Provide a MOMS that supports maintenance functions, including but not limited to:		
	· automatic system job/workflow/queue exception reporting and alerting for all elements that are not processing correctly or are hung in the system;		
	· issuing electronic notifications via email or text to Maintenance staff when problems are detected;		
	· prioritization of failures and alerts that is configurable and alert Authorized Users when configurations are changed;		
	· for the calculation of response times, repair times, and down time from the data entered by the Maintenance staff and automatically generated by the system, and		
	· scheduling of preventive Maintenance through the MOMS that generates automatic work orders at the scheduled times.		
540	Provide a MOMS that supports asset management, including but not limited to:		
	· tracking of all system Hardware and Software items;		
	· tracking of all system Hardware and Software locations;		
	· tracking of all system Hardware and Software versions;		
	· tracking of all Maintenance and service agreements;		
	· maintains a list of vendors from where products were procured;		
	· associates the original purchase order number to the individual item;		
	· associates the original vendor number to the individual item;		
	· associates all warranty information to the individual item;		
	· provides an alert prior to warranty expiration, and		
	· provides automatic alert for spare parts levels.		
541	The MOMS will record all configuration data, and will be versioned after each system component change, including application of system patches.		
542	Provide the capability for Authorized Users to access the MOMS screen through the single Cashless Toll Host System GUI.		
543	Capability shall be provided to configure the priority level of each alarm and assign and change the escalation attributes.		
544	Provide the capability to configure the initiation of a notification in the MOMS when an alarm is generated.		
545	Authorized Users shall have the capability to indicate if an alarm should result in the generation of a work order and if an alarm should be considered in performance reporting.		
546	Provide the capability to generate (on-demand and scheduled) daily, weekly and monthly performance reports as determined by the Commission during Design.		
	Provide the capability to generate operational, management and performance reports from the MOMS that include but are not limited to:		
	· summarized and detailed alarm history;		
	· Maintenance paging and response history;		
	· work order status and tracking;		
	· Equipment inventory and tracking;		
	· Equipment availability;		
	· preventive Maintenance;		
	· pervasive Maintenance;		

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547	· corrective Maintenance; · response and repair times for each of the priorities and level of Maintenance; · Equipment use history; · Equipment repair history; · total system availability; · sub-system availability for the In-lane Systems and Cashless Toll Host System; · Equipment versions, Software versions, firmware versions and serial numbers for all Equipment installed under this Scope of Work; · incident logs and lost revenue estimates; · Mean Time Between Failures (MTBF) for the preceding and current Maintenance periods and cumulative; · performance reports detailing compliance to the performance requirements; · detailed list of parts replaced as a result of Maintenance actions, with an identification of warranty versus non-warranty replacement; · status of removed parts and Equipment with an aging status for parts under repair or replacement (serial numbers, being repaired in Maintenance shop, purchase replacement part); · performance reports; · an exceptions report summarizing all unusual or significant occurrences during the period; · trend analysis for repetitive failure; · status of spare parts inventory, and · staffing report detailing positions, staff hours worked and performance.		
548	Provide the capability to export relevant asset management reports for uploading into SAP.		
549	When spare parts inventory is reduced to a configurable threshold quantity, automatic reorder alerts shall be generated.		
550	Provide a MOMS that has the ability to receive information (success or failure), including but not limited to: · backup; · time synchronization; · synchronization of primary and secondary systems; · Software updates and · file downloads.		
551	In order to ensure that all tolling points are functional, all systems are operational, all the processes are working and file transfers are successful, Authorized Users shall have access to the MOMS screens. Capability shall be provided to verify the status of tolling point operations, the System and various file transfers, including the files transmitted and received from the PTC Toll Host system.		
552	Tolling point and System status shall be shown in a pictorial view with the capability to drill down to the device causing the alert and its associated error logs.		
553	The MOMS screen shall show if required files were transmitted to all the lanes, the PTC Toll Host system and the existing CSC/VPC System.		
554	In case of TSL and toll rate tables, the version in use shall be listed.		
555	Authorized Users shall have the capability to re-initiate download in the event transmissions were not successful, for example toll rate tables.		
556	Screens shall be available that show all the alarms generated by the various systems and subsystems, including the operating system and the database.		
557	Failure of all devices, processes, programs, and scheduled tasks shall be forwarded to the MOMS screen that is accessible to authorized staff.		
558	Various events and error logs shall be provided for each program that shall assist the system administrator to investigate problems.		
2.2.6.2	**System Health Monitoring Software**		
559	Provide System health monitoring Software that includes but is not limited to: · tight integration with the MOMS; · Hardware and network health monitoring; · a dashboard that graphically displays component's health; · comprehensive log reporting capabilities, and · integration with existing Commission monitoring Software.		
2.2.6.3	**Time Synchronization**		
560	The Cashless Toll Host server shall be synchronized to a certified source Approved by the Commission using the standard network time protocol (NTP) at configurable intervals, but at a minimum of every five (5) minutes.		
561	The zone controllers, AVI systems, AVC systems, LPICPS, image server(s), OCR/ALPR server (if the option to implement OCR/ALPR is exercised), DVAS, and other servers needed to support the requirements of this Scope of Work shall be synchronized to the Cashless Toll Host server or the Approved certified source.		

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562	If needed, synchronization messages shall be sent to devices that do not support off-the-shelf time synchronization Software.		
563	All servers and controllers shall have a primary and secondary source for synchronizing time.		
564	The time synchronization technique shall ensure that duplicate or incorrect transaction times are not possible.		
565	The Cashless Toll System shall have the capability to handle daylight saving time changes.		
2.3	**Test Site**		
566	The Contrator shall install and setup a dedicated test site at a Commission Approved location. that shall be available for testing Software and Hardware changes or upgrades for the term of the contract. The test site shall have the full suite of Equipment and Systems as an operational tolling point, and test transactions and data shall be transmitted to the Cashless Toll Host System test environment. The test site shall be monitored through the MOMS and maintained identical to other tolling point as specified in this Scope of Work.		
2.4	**National Interoperability**		
567	The Cashless Tolling System shall be Designed to accommodate future National Interoperability such that it supports the inclusion of multiprotocol readers and/or the inclusion of multiprotocol transponders. The Contrator solution shall allow for modifying and adapting the Design to incorporate new readers, antennas types and locations, and support the transition to the new interoperable solution with limited interruptions to the revenue collection.		
568	The Contrator shall support the conversion to National Interoperability if it becomes available during the term of the Contract.		
2.5	**Accuracy Requirements**		
	The Contrator shall provide a Cashless Tolling System that is Designed to meet the accuracy, performance and throughput requirements set forth in this Scope of Work. The testing logistics required to prove adherence to these requirements shall be detailed in the Master Test Plan and the test procedures as set forth in Section VI of the Scope of Work.		
569	The sample size for each requirement shall be the greater of N = log (1 - C) / log (A); or 100,000 transactions for the Cashless Tolling System Operational and Acceptance Test described in Section 6.6; where: * N = Number in the sample * C = Confidence level * A = Accuracy A value of ninety five (95) percent shall be used for the confidence level. Accuracy and confidence levels are expressed as decimals.		
2.5.1.1	**General Requirements**		
570	The Contrator shall provide a Cashless Tolling System that meets an overall accuracy of at least 99.9 percent for vehicle detection and classification, transponder read and association and vehicle image capture and association. The metrics to validate overall accuracy requirements will be a weighted averaging of the subsystems and shall be defined by the following formula: Where: Vehicle Detection Rate, Transponder Association Rate, Vehicle Classification Rate and Image Capture Rate are obtained from the transactions collected during the Cashless Tolling System Operational and Acceptance Test described in Section 6.6. *Overall Accuracy Rate* *= (Vehicle Detection Rate x Vehicle Detection Weight Factor)* *+ (Transponder Association Rate x Transponder Association Weight Factor)* *+ (Vehicle Classification Rate x Vehicle Classification Weight Factor)* *+ (Image Capture Rate x Image Capture Weight Factor)* Vehicle Detection: Weight Factor 0.40; Transponder Association: 0.15; Vehicle Classification: 0.15; Image Capture: 0.30		
571	The Contrator shall provide a Cashless Tolling System that meets the accuracy requirements described below. The Contrator shall validate System compliance to the accuracy requirement by collecting data to the required sample size in live traffic operations as described below for each requirement.		
572	Data collection shall include the use of live traffic and controlled vehicles (vehicles with a known transponder status) intermingled with live traffic to emulate normal operations such as congestion and traffic patterns as specified below for each requirement.		

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573	Prior to the start of testing the System shall be confirmed to be fully operational and ready for testing. Transactions that fail to meet the requirements shall be reviewed and audited and anomalies investigated. Exception criteria identified during the Design phase and the development of the test procedures that fall outside the System Design may be excluded from the accuracy calculations.		
2.5.1.2	**Transponder Capture Rate**		
574	A transponder mounted in accordance with the manufacturer mounting instructions shall be captured by the AVI system under all conditions within the Design specification described in this Scope of Work with an accuracy rate as defined by the greater of the E-ZPass Group or manufacturers specifications This requirement applies to all tolling point types based upon the transponder mix collected during the testing period for the Commission Approved sample size.		
2.5.1.3	**Transponder Reporting Accuracy**		
575	A transponder that is detected and read by the AVI reader shall be reported to the zone controller with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of transponder reads collected during live traffic operations.		
2.5.1.4	**1.1.1.3 Transponder Write Performance Accuracy Rate**		
576	The AVI system shall successfully and accurately complete a write operation to associate data with a passing vehicle with an accuracy rate as defined by the greater of the E-ZPass Group or manufacturers specifications under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of transponders captured during live traffic operations.		
2.5.1.5	**Vehicle Detection Accuracy**		
577	The zone controller shall detect and report vehicles traveling through the tolling point under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.6	**Transponder Association Accuracy**		
578	Every Transponder that is reported to the zone controller shall be assigned to the correct vehicle under all conditions within the Design specification described in this Scope of Work. This requirement applies to all tolling point types based upon the transponder penetration rate collected during the testing period for the Commission Approved sample size. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.7	**Vehicle Classification Accuracy**		
579	The zone controller shall classify all vehicles in accordance with the Commission classification structure traveling through the tolling point with accuracies defined below under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.8	**Image Capture Reporting Accuracy**		
580	The System shall capture, report and correctly associate an image of the vehicle to the correct vehicle as defined in the Commission Business Rules under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.9	**License Plate Extraction (OCR/ALPR) Accuracy (if the option to implement OCR/ALPR or VEL is exercised)**		
581	For all video transactions without exception, the System shall perform OCR/ALPR on minimum seventy (70) percent of the images to obtain the license plate, jurisdictions and plate type with at least 99.95 percent accuracy of for the States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA. For vehicles identified as requiring front plates the results shall be from the front image. Testing shall require the use of vehicle data collected during live traffic operations.		
2.5.1.10	**Overall Image Quality**		
582	For all video transactions, at least 99.95 percent of the images that are included in the calculation shall have a human readable license plate, jurisdiction and plate type. For vehicles identified as requiring front plates the front image shall be used. Testing shall require the use of vehicle data collected during live traffic operations.		
	A plate shall be considered excluded from Overall Image Quality calculation only when:		
	· the vehicle has no plate;		
	· the plate numbers/letters are not human readable due to damage or obstruction.		
2.5.1.11	Transaction Processing Requirements		
583	All transactions generated by the zone controllers in accordance with the above accuracy requirements shall be reported and transmitted for processing to the Cashless Toll Host Systems with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.		
2.5.1.12	**False Read Processing**		

<table>
<tr><th colspan="4">Functional Requirements</th></tr>
<tr><th rowspan="3">No.</th><th></th><th colspan="2">Required Proposer Inputs</th></tr>
<tr><th></th><th>Status of Functionality</th><th>Comments</th></tr>
<tr><th>Requirements</th><th>Existing (E) - Met by current system, no modifications required
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<tr><td>584</td><td>The Cashless Tolling System false read processing (example cross lane reads and duplicate reads) shall be less than 0.001 percent of the transponder transactions under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations and test results will be verified by monitoring the CSC for accurate account posting and anomalies will be investigated.</td><td></td><td></td></tr>
<tr><td>2.5.1.13</td><td>Video Transaction and Image Transmission Requirements</td><td></td><td></td></tr>
<tr><td>585</td><td>All video transactions and images from the Cashless Tolling System shall be transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.</td><td></td><td></td></tr>
<tr><td>2.5.1.14</td><td>AVI Transaction Transmission Requirements</td><td></td><td></td></tr>
<tr><td>586</td><td>All AVI transactions from the Cashless Tolling System shall be transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.</td><td></td><td></td></tr>
<tr><td>2.5.1.15</td><td>Vehicle Throughput Requirements</td><td></td><td></td></tr>
<tr><td>587</td><td>The Cashless Tolling System shall process a minimum of 2,400 vehicles per hour per lane with a video transaction rate of one hundred (100) percent. Testing shall include the simulation of vehicle events that exercise all of the toll collection equipment and devices.</td><td></td><td></td></tr>
<tr><td>2.5.2</td><td>Mean Time Between Failure (MTBF)</td><td></td><td></td></tr>
<tr><td>588</td><td>The Cashless Tolling System shall be required to meet specific minimum duration requirements for components and subsystems in continuous operation. This time requirement is defined as the Mean Time Between Failure (MTBF). The Contrator shall provide all third-party MTBF on individual components to be used in the System.</td><td></td><td></td></tr>
<tr><td>589</td><td>MTBF requirements for all components of the Cashless Tolling System shall meet the MTBF as specified below in Table II-1:
Table II–1: MTBF Requirements
<table><tr><th>Component</th><th>MTBF (hours)</th></tr><tr><td>Redundant Zone Controller</td><td>30,000</td></tr><tr><td>Automatic Vehicle Identification (AVI) System Components</td><td>20,000</td></tr><tr><td>Automatic Vehicle Classification (AVC) System Components</td><td>30,000</td></tr><tr><td>License Plate Image Capture and Processing System (LPICPS) Components</td><td>30,000</td></tr><tr><td>Cashless Toll System Servers</td><td>50,000</td></tr><tr><td>Network Devices</td><td>50,000</td></tr></table></td><td></td><td></td></tr>
<tr><td>590</td><td>The reliability of the System components shall be calculated based on the following MTBF calculation: MTBF = # units x test period (hours)/ # chargeable failures</td><td></td><td></td></tr>
<tr><td>2.5.3</td><td>Availability</td><td></td><td></td></tr>
<tr><td>591</td><td>The Contrator shall meet availability requirements for the following elements of the Cashless Tolling System:
Table II–2: Availability Requirements
<table><tr><th>System or Subsystem</th><th>Availability Requirements (Monthly) Percentage (%)</th></tr><tr><td>Toll Zone Lane Systems</td><td>99.95</td></tr><tr><td>Cashless Toll Host System</td><td>99.95</td></tr></table></td><td></td><td></td></tr>
<tr><td>592</td><td>The availability requirements shall be separately calculated and applied to an available lane with all of its subsystems properly functioning and available to collect revenue and send required transactions to the Cashless Toll Host System and images to the image server(s)/CSC VPC systems.</td><td></td><td></td></tr>
<tr><td>593</td><td>The availability requirements shall be separately calculated for the Cashless Toll Host System with all of its devices, Software, applications and processes properly functioning and available to the Authorized Users, successfully transmitting transactions to the PTC Toll Host systems and the CSC/VPC systems, successfully transmitting files to the SAP system and communicating with the in-lane systems.</td><td></td><td></td></tr>
<tr><td>594</td><td>Availability shall be calculated based on the following calculation:</td><td></td><td></td></tr>
<tr><td></td><td>Availability = 100% - [Hours Downtime / (# Days in time period measured * 24)]</td><td></td><td></td></tr>
<tr><td>595</td><td>The Cashless Tolling System compliance to the availability requirements shall be validated during the Operational and Acceptance Test described in Section 6.6 Cashless Tolling System Operational and Acceptance Test.</td><td></td><td></td></tr>
</table>

Functional Requirements			
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596	During the Cashless Tolling System Maintenance and Software Support Services, the Contrator shall prove the Cashless Tolling System compliance to the availability requirements as described in Section 7.22 Performance Requirements for the Cashless Tolling System and Liquidated Damages.		
2.5.4	**Chargeable and Non-Chargeable Failures**		
	For purposes of calculating MTBF and Availability performance requirements for testing, as detailed in Section VI, and for Maintenance performance, as detailed in Section VII, chargeable and non-chargeable failures are defined as follows:		
2.5.4.1	**Chargeable Failures**		
597	Chargeable failures include any failures that are not specifically identified as non-chargeable, including, but not limited to the following:		
	· A malfunction which prevents the Cashless Tolling System component (Hardware or Software) from performing its designated function, when used and operated under its intended operational and environmental conditions as detailed in this Scope of Work.		
	· A malfunction that poses a threat to the safety of the Cashless Tolling System components, PTC customers, employees or others.		
	· An occurrence where data is not successfully transmitted between the lanes and the Cashless Toll Host System and images from the lanes to the image server(s) unless such failure is due to the WAN provided by the Commission.		
	· A failure of Equipment or Software that allows data loss to occur on the Cashless Tolling System.		
	· A failure of Equipment or Software that allows revenue loss to occur on the Cashless Tolling System that is not already accounted for as a separate performance failure.		
	· Software anomalies and bugs that affect the performance and operation of the Cashless Tolling System.		
	· Shutdown or unavailability of the Cashless Tolling System unless specifically directed by the Commission for reasons not under the control of the Contrator.		
	· Failure to properly register or report a transaction.		
	· Failure to properly reconcile the Cashless Tolling System.		
	· Failure to electronically send or receive transaction information.		
	· Failure to generate the reports required to reconcile and audit the System.		
2.5.4.2	**Non-Chargeable Failures**		
598	Non-chargeable failures shall include:		
	· force majeure, as defined in the Contract Documents;		
	· vandalism;		
	· failure of a test facility or test instrumentation;		
	· failure of a component the Commission has responsibility;		
	· System component failures caused by externally applied stress conditions outside of the requirements of this Scope of Work;		
	· System component failures caused by environmental or operating conditions outside of the requirements of this Scope of Work;		
	· normal operating adjustments as allowed in the Test Procedure or Maintenance Plan, as applicable, and		
	· failures that are customer or user induced.		
III.	**Cashless Tolling System Transition**		
	All Commission facilities including barrier, ramp and the mainline will be transitioned to cashless tolling in accordance to Attachment 10: Cashless Tolling Concept Plan and the Approved project schedule. The Contrator's installation and transition plan shall support the conversion of the existing toll collection system to the Contrator's Cashless Tolling System.		
3.1	**Cashless Tolling System Transition – General Requirements**		
599	The Contrator shall accommodate the various installations of the Cashless Tolling System implementation in accordance with the Approved schedule.		
600	All changes to the System to accommodate technology upgrades and meet the Contract requirements shall be the responsibility of the Contrator.		
601	The Contrator schedule shall be sufficiently flexible to accommodate modifications or changes such as early completions or delays in start or completion of phases that would normally be expected in a multi-phase, multi-Contrator construction schedule.		
3.2	**Cashless Tolling System Implementation**		
602	The Contrator shall procure, Design, test, and install the Cashless Tolling In-lanes Systems, including the redundant Cashless Tolling In-lane System Hardware, Software, Equipment, Interfaces and communications provided in the toll equipment building at each tolling point.		
603	The Cashless Toll Host Systems shall be tested and interface testing completed prior to commencing Onsite First Installation Test (OFIT) for the Cashless Tolling System at the initial implementation.		

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604	The installation and Commissioning of all cashless tolling point implementations shall be in accordance with the Approved Transition Plan.		
3.3	**Transition to Cashless Tolling**		
3.3.1	**Cashless Tolling Transition Plan**		
605	The Contrator shall provide a detailed Transition Plan for Commission Approval that addresses all critical transition elements and activities associated with the installation and implementation of the Cashless Tolling System, including Cashless Tolling In-lane Systems; Cashless Toll Host Systems, and interfaces to the PTC Toll Host system and the existing CSC/VPC system.		
606	The Transition Plan shall address the integration and interface of the Cashless Toll Host System to SAP when all existing facilities are converted to cashless tolling and the existing PTC Toll Host system is de-commissioned.		
607	The Transition Plan shall address the migration of data from the current PTC Toll Host to the Cashless Toll Host System for new facilities as well as when existing facilities are converted to cashless tolling and the existing PTC Toll Host system is de-commissioned.		
608	The Transition Plan shall, at a minimum, include the installation, Commissioning, Revenue Collection and acceptance of Cashless Tolling In-lane Equipment, the transition (where applicable) from cash collection to cashless tolling operations, and Acceptance of each implementation phase of the Project.		
609	The operational requirements, interfaces, and/or Equipment installation for the Cashless Tolling System and its interface to the PTC Toll Host system, SAP and existing CSC/VPC System shall be included.		
610	Any temporary processes implemented to support the transition shall be documented in the Transition Plan including eventual replacement process if applicable.		
611	All points of coordination or reliance on third-party deliverable, for example the WAN communications network shall be clearly identified in the Transition Plan.		
612	The impacts to existing systems including those in the proximity of the tolling point shall be addressed in the Transition Plan.		
613	The Cashless Tolling System Transition activities shall be coordinated with the civil Contrator, civil designer and existing system integrators and Approved by the Commission in order to not interfere with on-going and continuing maintenance and operational requirements.		
614	In order to ensure a seamless transition, the following activities shall take place prior to opening the first tolling point to cashless tolling in revenue collection.		
	· Upon Approval to proceed with a Commissioning Test, the Contrator shall conduct such test at each tolling point prior to opening each location to traffic and revenue collection. Since each location may also include civil construction, the Contrator shall be responsible for interfacing and coordinating with the civil Contrators for scheduling and maintenance and protection of traffic requirements during the conversion to cashless tolling.		
	· The Cashless Toll Host servers and central image servers (if implemented) shall be installed and commissioned at the primary and secondary locations and its interface to the PTC Toll Host system and existing CSC/VPC shall be validated.		
	· The MOMS shall be configured for go-live; inventory recorded; technicians scheduled, and notifications set up;		
	· The DVAS shall be installed and validated and Authorized Commission personnel shall have access to the DVAS;		
	· The OFIT shall be conducted and Cashless Tolling System functionality and performance validated at the initial tolling point installation;		
	· An end to end test shall be conducted in the PTC Toll Host system and existing CSC/VPS system test environments, and		
	· The Commission shall confirm the existing systems are ready for Conversion and give Approval for Go-Live. At such time, the Cashless Tolling System shall be switched over to the production PTC Toll Host system and existing CSC/VPC system.		
615	The Contrator shall plan for possible variances in the sequencing of the transition due to construction and readiness of the CSC/VPC systems and operations in its Transition Plan.		
IV	**Cashless Tolling System Installation Requirements**		
	This section details the requirements for the installation of the In-lane Cashless Tolling System and the Cashless Toll Host System. Unless Approved by the Commission, no System installation shall occur prior to the satisfactory Approval of Installation Design and the Factory Acceptance Test.		
4.1	**Installation Program**		
616	The Contrator shall have an Installation Program that addresses all aspects of the installation of the In-lane Cashless Tolling Systems and the Cashless Toll Host System, including all installation Design, submissions and coordination.		
617	The Contrator is responsible for the Design, procurement, installation, cabling, configuration, check-off, and testing of all Hardware, Equipment, communications, and Software and fixtures provided by the Contrator as part of the In-lane Cashless Tolling Systems at each of the tolling points identified by the Commission.		

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618	In the event the Contrator decides to re-use existing Hardware, conduits and junction boxes, the Contrator is responsible for ensuring that such elements are in their fully operational condition and will meet the requirements of the Contract for the term of the Contract.		
619	The Contrator shall install the Cashless Tolling In-lane servers and Hardware in the toll equipment building provided by the Commission through the civil Contrator.		
620	The Contrator shall install the Cashless Toll Host Systems at the primary and secondary locations.		
621	The Contrator shall work with the Commission to test the WAN and the connections to the PTC Toll Host system and the existing CSC/VPC systems. Testing shall include expected traffic loads and all types of production operation data		
622	The Contrator shall coordinate all lane closure activities with the Commission and the civil Contrator.		
623	The Contrator shall validate and approve the Commission and the civil Contrator infrastructure installation and confirm they are in compliance with the Approved civil drawings.		
624	The removal and disposal of the existing equipment not re-used by the Contrator will be responsibility of the civil Contrator and the Contrator shall support the coordination of this work.		
625	The Contrator shall install and tune the certified AVI Equipment to the AVI vendor specifications in compliance with the E-ZPass Group requirements. In addition, the AVI vendor shall certify that the lanes are tuned to the Approved AVI specifications.		
4.2	**Installation Plan**		
626	The Contrator shall develop and submit an installation plan that identifies its approach to installation and drawing package submissions and documents all installation related activities for the Project. The installation plan shall be the master document from which the elements of the System shall be installed.		
627	The installation plan shall include and define, at a minimum, the following items:		
	· The installation schedule detailing all activities, shifts and resources for the installation of the In-lane Cashless Tolling Systems and the Cashless Toll Host Systems, including third-party and civil Contrator activities. Once the baseline schedule is Approved by the Commission, updates during the installation periods identifying all schedule changes and Work progress in the form of percentage completions shall be submitted to the Commission for Approval.		
	· The minimum resource allocation requirement for any installation phase and segment.		
	· How the Contrator manages delivery and staging of the Cashless Tolling In-Lane and Host Equipment to be installed, including any staging, installation and testing performed at the Contrator or third-party facilities and their subsequent delivery and installation at the production sites.		
	· The coordination between other Contrators, including the civil designer, civil Contrator(s), service providers, and the existing Contrators.		
	· Coordination of the lane closures with the civil Contrator(s) for each phase of the project.		
	· Coordination with the civil Contrator(s) for the installation of the toll equipment building, the generators and UPS.		
	· Coordination activities as applicable with other third-party entities for the various interfaces.		
	· Testing of the Commission provided fiber communications network for connection to existing PTC Toll Host system and the existing CSC/VPC system.		
	· Quality control, quality assurance, inspection, and testing processes including validation of Contrator installation to the requirements of the Contract installation drawings.		
	· The order in which Equipment items are to be installed with estimated durations.		
	· Special or unique installation requirements.		
	· A detailed component list and a description of how each item version number and serial number shall be recorded for each installation and configuration into the MOMS.		
	· Organization Chart defining Key Team Personnel, roles and responsibilities and contact information.		
	· Contingency Plan.		
	·		
4.3	**Installation and Construction Coordination and Meetings**		
	During the Project Design, development and installation periods there shall be a series of meetings between the Contrator, the Commission, existing Contrator, civil designer and the civil Contrator(s) to clearly define and develop the installation requirements, methodology, timetables, test plans, roles, and contingency plans. The Contrator is responsible for coordinating and scheduling all meetings necessary to complete the Design and installation phase of the Project.		
628	The Contrator shall schedule, manage and attend weekly installation meetings during the active Design and installation phases of the Project and report on progress of the installation. The Contrator shall identify and communicate any issues regarding Cashless Tolling System construction and installation immediately upon discovery to the civil Contrator(s), existing system integrator and the Commission.		
629	The Contrator shall ensure that the appropriate personnel are present at these meetings who can represent the Contrator's interest and provide the information necessary in a meaningful manner.		

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630	Prior to the meeting, the Contrator shall update the installation schedule based on the construction schedule and all changes shall be identified.		
631	The Contrator shall prepare and distribute a meeting agenda at least forty-eight (48) hours prior to the scheduled meeting. The meeting agenda shall consist of those items pertaining to the installation and schedule for the previous and current week's installation efforts and for an agreed to "look ahead" period.		
632	It is the Contrator's responsibility to make sure all issues that arose during the installation activity for the week are addressed and resolved or is scheduled for resolution.		
633	At these meetings, the Contrator shall also be prepared to address any issues or questions raised by the civil designer, civil Contrator, other Contrators, and the Commission or its representative.		
634	The Contrator shall document the meeting discussions and distribute the meeting minutes to the team. The Contrator shall also record and maintain an action items list that tracks all installation related issues.		
4.3.1	**Construction Coordination with Infrastructure Contrators**		
	The Contrator shall coordinate all installation activities with the civil Contrators on new cashless tolling facilities to ensure all Cashless Tolling System Equipment specifications are addressed in the Design and installation of the cashless tolling infrastructure. Attachment 2: Cashless Tolling Installation Responsibility Matrix defines the areas of responsibility for the parties involved in the Project Design and construction for new cashless tolling facilities.		
635	The Commission (or its civil Contrator) is responsible for the construction of the overhead structures/toll gantries, installation of the toll equipment building and provision of the generators for the new tolling point, and the Contrator shall coordinate closely with the Commission, and the Commission Contrators.		
636	The Contrator shall participate in the Design and installation of the cashless tolling infrastructure at the tolling points, including but not limited to:		
	· provide all required Design and installation drawings, operating requirements and installation specifications to the Commission and the civil Contrators for all toll system Equipment provided;		
	· support and supply all information requested by the civil Contrator and civil designer in the form of request for information (RFI);		
	· review all civil Contrator provided drawings with respect to the toll system;		
	· approve all aspects of such drawings related to the toll system, and		
	· ensure the Cashless Tolling System infrastructure needs necessary to meet the requirements set forth in this Scope of Work are met with regard to such Design.		
637	The Contrator shall be responsible for ensuring that the locations, positions, installation, connections and other elements of the Contrator inputs identified on the Design and installation drawings provided by the Contrator, for all Contrator and Commission provided Equipment, whether in-roadway, structure/toll gantry mounted, in the toll equipment building or otherwise located are accurate and correct.		
638	Contrator shall also ensure that the installed roadway; infrastructure; structures/toll gantries; toll equipment building; UPS, and generators meet the Design requirements provided by the Contrator and shall approve such installed work with regard to the Design provided.		
639	Contrator shall cooperate with the Commission and infrastructure contactors to minimize required number of lane closures and to maximize the use of other scheduled lane closures. The Contrator shall transmit all lane closure requests to the Commission for approval.		
640	Contrator shall work with the Commission and agree to a reasonable plan for scheduling and approving lane closures, including a procedure for advance notice of cancellations of lane closures and allowable conditions for such cancellations as described in this Scope of Work. The civil Contrator is responsible for administering all lane closures and traffic controls during the installation phase and for all testing through Acceptance.		
4.3.2	**Construction Coordination with Civil Contrator**		
641	The Contrator shall coordinate all installation activities with the civil Contrator. Attachment 2: Cashless Tolling Installation Responsibility Matrix defines the areas of responsibility for the parties involved in the Project Design and installation on the cashless tolling facilities.		
4.4	**Installation Requirements**		
642	The Contrator shall be responsible for procurement, installation, cabling, termination configuration, testing, and check-off of all Equipment and Software required to meet the requirements of the Contract.		
643	The Contrator shall install all appropriate In-lane System servers and Equipment required by the Cashless Tolling System in the toll equipment building provided by the Commission through a third party.		
644	Procurement, installation, configuration, and testing of all local area communications Equipment and connection to the Commission installed network equipment in the toll equipment building shall be the responsibility of the Contrator as further set forth in this Scope of Work.		
645	Procurement, installation, configuration, and testing of all appropriate Cashless Toll Host System servers, Equipment and Software required by the Cashless Toll Host System at the primary and disaster recovery locations and validating communications to its interfacing systems shall be the responsibility of the Contrator as further set forth in this Scope of Work.		

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4.5	**Compliance to Standards**		
	The Contrator shall adhere to all installation standards, applicable laws, ordinances and codes as required.		
646	The Contrator shall meet all electrical codes, traffic control, seismic considerations, calibration, configuration, and environmental requirements of and including, but not limited to:		
	· Equipment manufacturer's;		
	· NEC;		
	· UL standards;		
	· PTC;		
	· PennDOT;		
	· FHWA;		
	· IEEE (Institute of Electrical and Electronics Engineers);		
	· OSHA requirements, and		
	· any local authorities having jurisdiction.		
647	The Contrator shall adhere to all specifications of the latest Commission Standard Specifications at time of construction unless the Contrator receives written notification by the Commission which overrides the Standard Specifications. Commission Standard Specifications are located at: https://ebs.paturnpike.com/generalinformation/documents		
648	The Contrator shall be responsible for all costs associated with any permits, plan reviews, and inspections related to toll system work.		
649	It shall also be the Contrator's responsibility to procure all documentation required to install and adhere to the proper installation standards, law, ordinance, or codes.		
650	The Contrator shall procure Services of SubContrators qualified to work in this industry. If a vendor's component requires a vendor Approved installer, the Contrator shall use an Approved component installer, including qualified vendor staff.		
4.6	**In-lane System Installation Requirements**		
651	The Contrator shall supply all personnel, tools, vehicles, materials and Equipment required to perform the complete installation of the Cashless Tolling System, including but not limited to all Equipment and vehicles required for overhead installation Work on the overhead structures/toll gantries; specialty Equipment for preparation and saw-cutting of loops as required, and provide necessary test vehicles to adequately test the installed System in accordance with the Approved test plan.		
652	Where the Contrator is providing subsystem components manufactured by a third party vendor, the Contrator shall ensure that all such components are installed in accordance with manufacturer's installation guidelines. Third-party onsite services shall be obtained as applicable to install, configure and tune the first on-site installation.		
653	The Contrator shall provide onsite and remote support for such subsystem manufacturer components as necessary to ensure the proper installation and operation of its Equipment at no additional cost to the Commission. All third party Equipment and subsystems shall be certified by the manufacturer as being compliant with their installation guidelines and meeting Contract requirements.		
	The installation responsibilities for the Cashless Tolling System shall include but not be limited to:		
	· Furnish and install uninterruptable power to all Cashless Tolling System Equipment on the overhead structures/toll gantries and in the toll equipment building. UPS and generator will be provided by the Commission.		
	· Furnish and install all connecting conduit from wire ways and conduits provided and installed by others and/or stub conduits to the Equipment. The civil Contrator(s) will install the conduits from the toll equipment building to the demarcation point on the overhead structures/toll gantries as shown in Attachment 6: Installation Demarcation Diagram.		
	· Furnish and install separate ground wires for the Cashless Tolling System, surge protection devices (SPD), junction boxes, pull boxes, conduits, and other such items as required by the installation standards and requirements. All exposed junction boxes, pull boxes and other Hardware shall be either zinc coated and epoxy painted or stainless steel;		
	· Furnish and install all wiring for all in-lane Equipment and connections to the equipment racks in the toll equipment building. This includes the proper termination of all power, communication, and RF cables and/or wiring (copper or fiber optic) required to connect the individual components into a fully operational System as specified by the manufacturer.		
	· Furnish and install all Equipment racks required for the in-lane electronics in the toll equipment building.		
	· Furnish and install all AVI readers in the toll equipment building (if applicable) or at Approved Commission location.		
	· Furnish and install all zone controller computers (Hardware and Software) into the equipment racks and test it connection to the zone controller and the facility servers (if provided)/ Cashless Toll Host Systems.		
	· Furnish and install all electronics and other devices in their respective equipment racks as required to provide a fully operational System.		

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654	· Furnish and install all Equipment mounting brackets to support structures for the installation of all toll system Equipment on the mounting arms on the overhead structures/toll gantries.		
	· Furnish and install the AVC system Equipment, including in-pavement sensors and overhead mounted Equipment and controllers as specified by the manufacturer. Includes all the Commission Approved materials, Equipment and supplies required for saw-cutting, wiring and sealing of wires in the roadway.		
	· Install the AVI system Equipment, including antennas, readers, related Equipment, cables, and any support brackets required. All AVI mounting Hardware, junction boxes, and cables shall be procured and supplied by the Contrator.		
	· Synchronize the new Cashless Tolling System with existing AVI system, including the provision of required cables as needed.		
	· Furnish and install the LPICPS Equipment, including cameras, LPICPS illumination, and any video controller Equipment, sensors, Software, controllers/servers, or specialty Equipment associated with the LPICPS.		
	· Furnish and install facility servers (if required) in the equipment racks, including Software and test it connection to the zone controller and the Cashless Toll Host Systems.		
	· Validate all cable and wire terminations via a test process to ensure that the cable is connected to the correct location on each end and that the cable/wire is properly terminated.		
	· Power up and provide a field check out/installation acceptance test of all systems, to be witnessed and Approved by the Commission or its designated representative. Provide the completed installation checklist as described in Section III of this Scope of Work.		
	· Tuning and testing of the AVI system, as described in, and in full accordance with, manufacturer's guidelines.		
	· Calibration and testing of LPICPS in full accordance with manufacturer's guidelines and to meet the OCR/ALPR requirements specified in the Scope of Work (if the option to implement OCR/ALPR is exercised).		
	· Calibration and testing of AVC system in full accordance with manufacturer's guidelines.		
	· Installation, calibration and testing of the DVAS cameras and Equipment.		
	· All other items, materials, and Equipment to complete installation in accordance with the Contract.		
4.7	**Cashless Toll Host System Installation Requirements**		
655	The Contrator shall coordinate all Cashless Toll Host System installations and testing of the WAN and interfaces to the existing systems with the Commission and existing system integrator.		
656	The Contrator shall install all Cashless Toll Host Systems, including primary and secondary host servers and central image servers (if provided) at the primary and secondary locations specified in the Scope of Work and Approved by the Commission.		
657	All servers, storage devices, communications Equipment, and other Cashless Toll Host System Hardware shall be installed in the designated locations as prescribed in the drawings submitted by the Contrator and Approved by the Commission.		
658	The Contrator is responsible for the following activities, including but not limited to:		
	· furnish, install, configure and test the necessary servers in accordance with the Approved Design documents;		
	· furnish, install and test the storage units and backup devices;		
	· furnish, install and test the network Equipment at the primary and secondary Cashless Toll Host locations;		
	· validate communications to the Commission installed network equipment at the toll equipment building;		
	· establish and validate communications from the Cashless Toll Host System (host servers and image servers) to each of the tolling points at the toll equipment building;		
	· establish and validate communications from the Cashless Toll Host System (host servers and image servers) to the existing CSC/VPC system;		
	· establish and validate communications from the Cashless Toll Host System to the PTC Toll Host system and SAP;		
	· furnish, install and validate third-party Software and Contrator Software on all servers and Equipment required to support the Cashless Toll Host System;		
	· furnish, install, configure and test all servers and Equipment for correct point-to-point installation, proper connectivity, acceptable termination of all cables and successful communications linkage;		
	· Configure the Cashless Toll Host System to support interfaces as defined in the Approved ICDs and		
	· All other items, materials, Equipment and Software required to complete installation of a fully functional Cashless Toll Host System in accordance with the Contract.		
4.8	**Installation Checklist**		
659	The Contrator shall develop an installation checklist that tracks the progress and completion of all installation activities for the Cashless Tolling In-lane System installation and the primary and secondary Cashless Toll Host System facilities installation.		
660	The checklist shall be the document detailing those items required for the installation crew and technical team to complete the installation process for all Equipment and components, including terminations, connections and configurations.		

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661	A copy of the checklist signed and Approved by the Contrator, attesting to the completeness of the installation, shall be provided to the Commission after the completion of the installation activities for each lane at each tolling point.		
662	The Contrator shall conduct a final inspection of all installations and certify the installation Work.		
663	The Commission reserves the right to obtain the services of the Facilities Department to witness the Contrator inspection and conduct an independent inspection. The Contrator shall coordinate and support such inspections at each facility.		
664	The checklist shall identify all discrepancies and exceptions and Contrator shall be responsible for all corrections.		
665	The checklist shall document all changes identified during the installation process and all such changes shall be Approved by the Commission or its designated representative.		
4.9	**Electrical Work**		
666	Electrical Work to be performed under this Contract shall include, but not be limited to the following general items of Work:		
	· Provide and install surge protection devices as required to protect the Cashless Tolling System Equipment and electronics.		
	· Install junction boxes and terminate new cable and conduit attachment devices, where applicable.		
	· Bond all conduits, manhole frames, metallic junction boxes, and other conductive items to the grounding system in conformance with the Commission and PennDOT Standard Specifications, the NEC and other authorities that have jurisdiction.		
667	All electrical Work shall be performed in accordance with the applicable regulations and Approved by the Commission and other authorities having jurisdiction. Appropriate NEC compliance shall be adhered to with all electrical articles for installation pertaining to wiring, enclosures, and other electrical Equipment in hazardous locations. UL labels shall be provided for all electrical panel boards, enclosures, and accessories.		
668	All electrical Equipment must be inspected prior to installation for defects that could damage the Equipment or harm personnel. Any Equipment found to have defects shall not be installed but shall instead be replaced with a fully functioning replacement.		
669	All electrical Equipment shall be properly grounded for safety. Equipment shall be furnished with grounding pads or grounding lugs. All ground connections shall be cleaned immediately prior to connection.		
670	The Contrator shall provide all grounding material required for installation and all installations shall be in compliance with the applicable standards.		
4.10	**Lane Closure and Traffic Control Requirements and Conditions**		
671	The Commission will provide all MPT activities associated with completing Contrator Work during the Implementation Phase. All lane closures shall be coordinated with the civil Contrator and lane closure schedules shall be submitted to the Commission is advance for Approval. Lane closure schedules and lane closure requirements can be found on the Commission website at https://www.paturnpike.com/business/engineering_standards.aspx		
672	In-lane Cashless Tolling Equipment installation shall be scheduled to minimize traffic delay during the installation process. The Contrator shall make every effort to schedule Work around peak traffic movement times. All lane closures shall be coordinated with the Traffic Operations Center.		
673	In the event that extended lane closures (lane closure exceeding 2 hours) are required, the lane closures shall be completed between the hours of 11:00 P.M. EST and 6:00 A.M. EST, excluding Holiday periods as set forth in the lane closure requirements.		
674	Lane closures scheduled for less than 2 hours shall be Approved by the Commission in accordance with the documentations provided on the website, and shall not occur during peak traffic times, and shall be solely at the Commission's discretion for Approval and continuance in cases where the lane closure is underway.		
675	The Contrator shall follow the requirements as stipulated in the latest applicable Commission's Maintenance and Protection of Traffic Standards: www.paturnpike.com/business/engineering_standards.aspx.		
676	Any Work involving removal/relocation of Equipment (loosening or removal of nuts/screws, cables, connectors etc.) shall be done with appropriate lane closures during nighttime period or off peak hours as listed within this section.		
677	Activities that require no removal/relocation of Equipment (for example, testing/monitoring functions) shall require no lane closures (Work shall be completed from the structure/walkway above live traffic). Activities shall be limited only to adjusting or shifting tethered toll Equipment in place without removal of Equipment, mounting devices, etc.		
678	All Equipment and tools shall be tethered at all times when working above open/live traffic.		
4.11	**Contingency Plan**		
679	A detailed contingency plan shall be prepared for reopening closures to public traffic. A general contingency plan shall be included in the Installation Plan; however, a site specific contingency plan shall be submitted to the Commission before Work at the job site begins.		
4.12	**Work Standards and Requirements**		

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680	The Cashless Tolling System Equipment installation shall be performed to an Approved set of plans, which has previously been submitted and Approved by the Commission or their designated representative.		
681	The Contrator shall provide Project management and oversight of all Work performed. At all times when installation Work is taking place, the Contrator shall have an individual designated in the Organization Chart as Site Manager onsite to supervise the installation.		
682	The Contrator shall install the Cashless Tolling System Equipment to the highest standards, using experienced and knowledgeable personnel. For example, journeyman electricians shall terminate all cables, wiring, or fiber optic cables.		
683	All tools such as crimpers, fiber optic termination tools, and test Equipment shall have been properly calibrated prior to being used.		
684	The Contrator shall provide a safe environment for the installation process in accordance with all applicable local, State and federal requirements, as well as any Commission policies. Examples include but are not limited to the following:		
	· safety harnesses shall be included and employed on all lifts, and the personnel trained on their use;		
	· hard hats and safety vest shall be worn in all construction areas;		
	· safety toe shoes shall be worn in construction areas and around active roadways while performing installation processes;		
	· Contrator issued identification badges shall be worn at all times, and		
	· regular safety meetings shall be scheduled to review safety procedures.		
4.13	**Design and Documentation during Construction and Installation**		
4.13.1	**Engineering Design**		
685	The Contrator shall secure the services of a fully-qualified engineering design firm(s) for the purpose of performing all infrastructure related engineering Design (civil, structural, electrical, mechanical, and architectural) and the preparation of related plans and documentation under the Contract.		
686	All Design Work shall be performed under the direct supervision of a Licensed Engineer of the appropriate discipline in the State of Pennsylvania. All design professionals shall be licensed and authorized to practice in the State of Pennsylvania.		
687	If the Engineering Design effort is performed by the Contrator, the Contrator shall submit documentation showing that the Contrator has met the required qualifications described in this section.		
4.13.2	**Document Control**		
688	The Contrator shall maintain a Configuration Management System to control all Project-related documents and drawings. Each document shall be properly titled, date updated, numbered by revision and version and shall incorporate signature blocks for authorship and approvals. Only the latest Approved drawing version may be used for installation.		
689	All documentation regarding the lane Equipment and Cashless Toll Host System Equipment installation shall be maintained by the Contrator. All drawings and other such documentation shall be made accessible to the Commission for review.		
690	The Contrator shall maintain all non-conformance reports (NCR) submitted by the inspectors and document the correction and resolution of all issues identified.		
4.13.3	**Installation Design and Drawings**		
691	The Cashless Tolling System Equipment shall be installed on existing infrastructure or overhead structures/toll gantries that will be designed and constructed by others separately procured by the Commission.		
692	The Contrator shall provide the installation requirements including acceptable tolerances for the Cashless Tolling System Equipment, including all related plans and documents. The civil designer and civil Contrators shall rely on the installation requirements provided by the Contrator to design and construct the overhead structures/toll gantries for the Cashless Tolling System Equipment to function as intended, and Contactor shall be fully responsible for the accuracy of its installation requirements.		
693	The installation requirements provided by Contrator shall be consistent with those provided in Contrator's Proposal and shall accommodate the selected design from the samples provided in Attachment 5: Concept Plan for Overhead Structures/Toll Gantries.		
694	The Contrator shall certify the installation requirements provided as accurate and appropriate for its intended purpose to the satisfaction and Approval of the Commission.		
695	Contrator shall indemnify all related parties as more fully described in the Terms and Conditions for any damages that result from reliance on the installation requirements provided by Contrator.		
696	The Contrator shall submit shop drawings detailing the installation Design that shall be used onsite for installation Work. Detailed drawings shall be provided for each site where Equipment procured and supplied under the Contact shall be installed.		
	The Contrator shall submit the following Design drawings as part of the drawing package in accordance with the Commission submission requirements, including but not limited to:.		

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697	· detailed installation drawing for each piece of Equipment;		
	· detailed drawing showing the equipment mounting brackets and details of their installation to the mounting arm;		
	· details related to the range of Equipment adjustments;		
	· detailed electrical schematics;		
	· all junction boxes and panels;		
	· detailed equipment rack layout and interconnections drawings;		
	· detailed communications layout;		
	· power and communications cabling schedules, and		
	· pavement installation details for in-pavement sensor installations.		
698	During installation the Contactor shall maintain a red line version of the drawing package that is submitted to the Commission upon the completion of the installation.		
699	Documentation shall include memos denoting changes or modification to requirements.		
700	The Contrator shall submit detailed component level network drawings showing all WAN, LAN and VLAN connections, including connection to the PTC Toll Host system, SAP and the existing CSC/VPC system.		
701	Contrator shall utilize a predefined range of IP addresses provided by the Commission. An IP schematic shall be submitted and Approved by Commission IT Security that shows all the IP addresses for all Contrator supplied Equipment on the network.		
702	The Contrator shall submit detailed component level primary and secondary server configuration instructions, including storage device mirroring, backup devices and configuration, and network configuration and testing.		
703	The Contrator shall submit detailed instructions on the installation of the operating system, database, third-party Software, and application Software on the servers.		
704	All testing required to verify successful installation and operation shall also be documented.		
4.13.4	**As-Built Drawings/Documents**		
705	The Contrator shall update the latest drawings with red-lines as changes are incorporated during the installation process. At the completion of the installation of the Cashless Tolling System, the Contrator shall gather all red line drawings.		
706	The red line drawings shall be verified and then incorporated into a final As-Built drawing package. This final As-Built package shall include installation drawings, shop drawings and sketches, and other drawing types that may have been used to install the Cashless Tolling System. The As-Built drawings shall include at a minimum power and data connections, installed equipment locations and electronic cabinet/panel layouts.		
707	All other documentation used regarding the installation shall be also be finalized and submitted as part of the As-Built submittal.		
V	**Cashless Tolling SYSTEM PROJECT REQUIREMENTS**		
5.1	**Cashless Tolling System Project Management**		
	The Contrator shall employ a Project Management System that is sufficiently detailed to enable the Commission to review and confirm that the Contrator has the necessary management, staff, and controls in place to meet the requirements of the Contract.		
5.1.1	**Program Management Plan**		
	The Program Management Plan describes how the Contrator plans to implement and manage the Project, including staffing, scheduling and communication procedures for controlling all correspondence, submittals, and other communications between the Contrator and the Commission, and communications with the civil designer, civil Contrators, third-party entities and existing Contrators.		
708	The Program Management Plan shall at a minimum include the following elements:		
	· Project scope and key Deliverables;		
	· a description of the management and organization of the program, including an organization chart, identification of Key Team Personnel, their responsibilities and percentage commitment to the Project, tasks leads for each functional area and location and identification of the resources to be used in fulfilling the requirements of the Contract;		
	· Project team (Contrator, the Commission, Commission's Representatives and existing Contrators) contact information;		
	· a description of the Project planning, documentation and reporting methods to be utilized, both for use within the Contrator's staff and externally to the Commission and other entities;		
	· a description of the process for communication, escalation and resolution of Project issues with the Commission;		
	· meeting schedules for meetings with the Commission and other entities including the form of the meeting as part of the Communication Plan;		
	· the Approved Project schedule;		
	· a description of the process for reporting, updating and tracking the Project schedule and Project performance;		

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	· coordination process with the civil designers, civil Contrators and management of the RFI process during the infrastructure design phase;		
	· coordination process with the civil designers, civil Contrators and management of the installation drawing review process;		
	· approach to change management, consistent with Contract requirements, including a description of the process for documenting and submitting change requests, the Approval process and how the change management approach will be integrated into day-to-day Project management;		
	· approach to document control, including Software (the Commission shall have the capability to download documents using this Software) and tools the Commission will use and have read-only access to via the Web;		
	· approach to risk management;		
	· approach to Quality Assurance and Quality Control;		
	· documenting the invoice submission, invoice backup information, verification, and Approval process;		
	· a section with all Approved Project forms including but not limited to, meeting agenda; meeting notes; action items tracking log; monthly progress report, and invoices.		
	· an emergency contact list as described further below in requirement #723.		
709	The Contrator shall identify the tools and products used to manage the Project and the internal controls instituted by the Contrator to guarantee successful delivery of the Project.		
710	The Contrator shall develop and submit the Project Management Plan to the Commission for review and Approval.		
711	The Contrator shall develop and submit a Communications Plan to the Commission for review and Approval that addresses the following, including but not limited to:		
	· all correspondence shall identify the originator and designated receiver.		
	· Tracking of document versions and changes.		
	· All invoices shall be submitted with accompanying backup information as required by the Contract and consistent with the Commission processes and invoicing and auditing policies. The Contrator shall work with the Commission to develop the appropriate invoice and back-up materials as a part of the PMP development.		
	· All submittals shall be delivered as an enclosure to the Contrator's submittal letter. Each submittal letter shall be limited to a single subject or item. The Contrator's letter shall identify the Contract number, Contract name and subject of the submittal.		
	· All items of correspondence, invoices, submittals and documentation shall contain the Contract number and the designated Contract name.		
	· Process for validating that all comments provided by the Commission on Contrator deliverables are successfully addressed.		
5.1.2	**Contrator's Project Management Office**		
712	The Contrator shall establish a Project management office in the Harrisburg metropolitan area. All Project management activities shall be conducted from this office.		
713	The Project manager shall be assigned to the Project management office and shall be one hundred percent (100) percent dedicated to the Cashless Tolling Project for the Implementation Phase of the Contract.		
5.1.3	**Staffing and Key Personnel**		
714	The Contrator is responsible for maintaining and assigning a sufficient number of competent and qualified professionals who speak fluent English to meet the requirements of the Contract.		
715	The Contrator shall ensure Key Personnel are readily accessible to the Commission or their authorized representatives during the Contrator's performance of this Contract.		
716	Contrator is required to provide staff at all times sufficient to meet the Project Requirements and Contract. The following are designated as Key Personnel for this Project and are subject to the Approval, replacement and removal requirements of the Commission for Key Personnel as set forth in the Contract:		
	· Project Principal – responsible for the overall conduct and performance of the Project, oversight of the Project, the performance of the Project manager and the Commission's single point of contact for any escalated Project issues that cannot be resolved by the Project manager;		
	· Project Manager – responsible for all day-to-day Work, the overall execution and delivery of the Project and the day-to-day Contrator contact person on the Project;		
	· Deputy Project Manager – assists the Project manager in the execution and delivery of the Project and the day-to-day operations;		
	· Technical Manager, Lane Systems – responsible for management of all In-lane Systems technology resources including selection of the lane solutions, subsystems, Software development and Systems maintenance.		
	· Technology Manager, Host Systems – responsible for management of all technology resources related to the Host Systems, including Software development, on-going Hardware/Software maintenance, Equipment and Systems and information security as required to satisfy the Requirements of the Contract;		
	· Installation Manager – responsible for the installation and Commissioning of the Cashless Tolling System;		

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	· Quality Assurance Manager – responsible for consistent quality throughout the Design, Development, Testing and Implementation of the Cashless Tolling System through good Quality Assurance and Quality Control practices, and		
	· Test Manager – responsible for the overall planning and implementation of the Cashless Tolling System testing program.		
5.1.4	**Cooperation with Other Contrators and Providers**		
717	The Contrator shall cooperate to the fullest extent with the civil designers, civil Contrators, the Commission and existing Contrators to ensure the Cashless Tolling System Implementation and Maintenance Phase do not conflict with or cause any interruption in capability, service or safety issues to the traveling public or customers, or impede the Commission's ability to collect tolls.		
718	The Contrator shall cooperate with the civil designers, civil Contrators, existing Contrators and external parties, as directed by the Commission, to support any activity related to the implementation of cashless tolling, including but not limited to:		
	· the Commission employees;		
	· the Commission designated representatives;		
	· other third parties, as directed by the Commission;		
	· law enforcement;		
	· inspectors;		
	· Auditors, and		
	· all Contrators.		
719	The Contrator shall cooperate with and immediately notify the Commission of any customer complaints and system issues identified in the Commission lanes that come to Contrator's attention during the course of Implementation, Testing or Maintenance Phases.		
720	The Contrator shall provide and maintain a current emergency contact list for the Commission's use at all times for handling emergencies and escalations. The emergency contact list shall name primary and secondary (multiple secondary contacts as applicable) points of contact for each anticipated emergency type. The emergency contact list shall name the Contrator's preferred points of contact, in order of precedence and shall include, at a minimum, the Contrator's primary Project manager, deputy Project manager, installation manager, technology manager, and other support staff. The purpose of the emergency contact list is to ensure the Contrator can be reached outside normal working hours to address urgent matters.		
5.1.5	**Monthly Report and Progress Meeting During the Implementation Phase**		
	Monthly Project reports and progress meetings will enable the Commission and the Contrator to monitor the status, progress, and quality of the Work performed on the Project and to take proactive steps to ensure successful delivery of the Project.		
721	The Contrator shall provide and maintain a schedule for monthly progress meetings (in addition to the weekly Design/installation meetings during the active Design/installation periods) at a location designated by the Commission. The meeting shall be scheduled no later than the 20th day of the following month.		
722	No less than five (5) Business Days prior to the meeting, the Contrator shall submit a draft monthly progress report to the Commission for the period covering the previous reporting period. The Commission shall review and comment on the progress report prior to the meeting.		
723	The Contrator shall obtain updated installation status prior to the monthly meeting and include such updates in the Project Implementation schedule which shall be submitted with the monthly progress report.		
724	The format of the monthly progress report shall be agreed upon as one of the initial Project tasks upon notice to proceed (NTP) and shall be incorporated by the Contrator into the Program Management Plan.		
725	The monthly progress report that includes but is not limited to:		
	· a summary outlining progress and status, and percentage of Work performed for each task as compared to planned activities in the Project Implementation schedule. Comments shall be included where appropriate. The summary shall also identify key milestones met and missed in the period;		
	· an analysis of all critical path tasks, potential risks associated with the tasks and proposed contingency/work around plans to circumvent or mitigate delays to the Project;		
	· identification of any Approved changes to Approved milestone dates and Approved Project Implementation schedule, clearly noting the details and identifying the Contract amendment;		
	· a discussion of schedule compliance and an updated Project Implementation schedule showing current status against the baseline Approved Project Implementation schedule. Past due tasks shall be updated and actual dates shall be recorded for completed tasks;		
	· an updated action items list that tracks the status of all outstanding action items, activities and issues that need decision/resolution;		
	· an updated deliverables list showing submission dates, current version, current review status, responsible party and due date;		

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	· a payment request, if applicable. Payment requests must identify the payment milestone, number and dollar amount. Payments requests shall be made for completed and Approved milestone payments only;		
	· a list of change requests (Contrator and Commission initiated) and their status;		
	· the previous monthly final meeting minutes, and		
	· a six (6) week look-ahead schedule.		
726	No more than five (5) Business Days after the meeting, the Contrator shall submit the final monthly progress report and draft meeting minutes for the Commission's review and Approval.		
5.1.6	**Project Meetings**		
727	In addition to the monthly progress meeting, weekly or bi-weekly Project status meetings, as applicable and Approved by the Commission, and other regularly scheduled installation and ad-hoc Project meetings shall be required during the course of the Project to address specific deliverables, Work items, Maintenance procedures and issues as they arise.		
728	The Contrator shall perform the following tasks related to all meetings, including but not limited to:		
	· develop and coordinate the Project meeting schedule;		
	· distribute notices of Project meetings in accordance with document control Requirements;		
	· prepare the agenda in coordination with the Commission;		
	· attend the meeting with all required staff in attendance;		
	· prepare minutes of the meeting and forward them to the Commission within five (5) Business Days after the day of the meeting and		
	· maintain an action item list for each type of meeting, identifying issues that need to be resolved at the Project level.		
5.1.7	**Project Schedule**		
	The Project schedule is a comprehensive list of Project milestones, activities and Deliverables, with intended start and finish dates, including a detailed Work Breakdown Structure (WBS) that identifies Project tasks down to the Work package level and the activities required to complete the Work package Deliverables.		
729	The Contrator shall provide and maintain a detailed Project Implementation schedule for the Project in Microsoft Project format (Project 2010 or above) that lists all Project activities and tasks for all Phases of the Project, including but not limited to:		
	· Requirements;		
	· Design;		
	· development;		
	· testing;		
	· installation;		
	· Transition, and		
	· deployment of the Cashless Tolling System at the various facilities.		
730	The Project Implementation schedule shall include coordination with civil Contrator, existing Contrators and the Commission and shall clearly document all interfacing tasks.		
731	The Project Implementation schedule shall identify all milestones and tasks, starting with the NTP through the date of Acceptance and end of Warranty for each implementation location of the Project.		
732	The Project Implementation schedule shall be resource loaded, and shall include all draft submissions and review cycles, and all tasks required of the Commission and other Contrators with critical tasks.		
733	The Project Implementation schedule shall identify all critical path tasks and shall be used to manage the Project.		
734	The Project Implementation schedule shall include all tasks for the submission and approval of the final civil drawings identifying the locations of all toll equipment to be install in a toll zone within 60 days of NTP.		
735	The Project Implementation schedule shall identify the anticipated Go-Live date of the 4th quarter of 2019.		
736	The baseline for the Project Implementation schedule shall be submitted to the Commission for Approval within fifteen (15) Business Days after NTP.		
737	The Contrator shall update the Project Implementation schedule on a monthly basis, as identified in the Requirements for the Monthly progress report.		
738	The Contrator shall use the Project Implementation schedule as the basis for all subsequent schedules and updates throughout the duration of the Project.		
739	The Contrator shall obtain Approval from the Commission for any and all changes to the baseline Project Implementation schedule and associated milestones in accordance with the Contract process for changes and amendments and are not considered Approved unless an amendment is executed through the Contract.		
5.2	**End of Contract Transition**		

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	The Contrator acknowledges that the Services it provides under the terms of the Contract are vital to the successful operation of the System and that said Services shall be continued without interruption. Upon termination of the Contract, a successor (the Commission or a new service provider) may be responsible for providing these Services. The Contrator agrees to exercise its best efforts and cooperation to affect an orderly and efficient transition to a successor.		
740	Upon the Commission's written notice, the Contrator shall furnish transition Services during the last ninety (90) days of the term of the Contract. The Contrator shall develop with the successor Contrator or the Commission staff, a Contract Transition Plan describing the nature and extent of transition Services required.		
741	The Contract Transition Plan and dates for transferring responsibilities for each division of Work shall be submitted within thirty (30) days of such notice. Upon completion of the Commission review, both parties will meet and resolve any additional requirements/differences.		
742	The Contrator shall provide sufficient experienced lane and Software support personnel in each division of Work during the entire transition period to ensure that the quality of Services are maintained at the levels required by this Contract.		
743	The Contrator shall provide sufficient staff to help the successor maintain the continuity and consistency of the Services required by the Contract. The Contrator shall allow the successor to conduct onsite interviews with the employees.		
744	The Contrator shall provide the necessary Software and Systems support Services to assist the successor operator in setting up the systems, transfer of appropriate licenses and third-party Software, and transition of all host data required to sustain uninterrupted service.		
5.3	**Software Design and Development Requirements**		
	The Commission expects the Contrator to propose a baseline product for the lane solution and the Cashless Toll Host System, and that some custom development will be required. To ensure the Design Requirements for the Cashless Tolling System are fully understood by the Commission and the Contrator, a series of Requirements and Design review steps are specified following a sequential Design process or waterfall model. The Contrator shall work with the Commission and its representatives to produce a Conformed Scope of Work and Requirements Document (CSWRD). The CSWRD shall be the basis for the Contrator to produce a Requirements Traceability Matrix (RTM). The RTM allows for verification that the Requirements are addressed in the Design and documented in the System Detailed Design Document (SDDD) and traced to test procedures that validate the developed Cashless Tolling System meets the Contract Requirements. The RTM shall be the basis for all Design, development and testing efforts and documentation to be developed by the Contrator.		
745	The Contractor shall establish and maintain an effective Software Design and development program along with a documented Software Development Life Cycle (SDLC) to ensure compliance with the Requirements of the Contract.		
746	The Contrator shall employ effective techniques and methodologies to develop the System Requirements and Business Rules for the Project.		
747	Prior to conducting any workshops, requirements reviews, focus group meetings and Design reviews, the Contrator shall develop the necessary documentation for the Commission review and submit such documentation ten (10) working days prior to such meetings.		
748	The Contrator shall provide a Table of Contents for the Design document that identifies the required document Deliverables and any document templates that will be used to develop the documentation. Such documentation shall be tailored for the Project, and the CSWRD shall be used for developing such documentation.		
5.3.1	**System Requirements Review (SRR)**		
	The Contrator shall conduct a series of System Requirements Review meetings with the Commission to outline how the Contract requirements will be met. The outcome of these meetings shall be a Requirements Traceability Matrix (RTM) that will be used to validate each Requirement against a Design item(s), Design Documentation and testing procedure(s).		
749	The Contrator shall conduct a series of System requirements reviews with user groups to identify user needs.		
750	The Contrator shall present lane logic and transaction framing rules of the baseline solution.		
751	Contrator's existing screens and presentation formats shall be used to solicit user requirements and feedback.		
752	During the System requirements review phase the Contrator can also present the Contrator's standard product to the Commission, and use the feedback obtained in the presentation in the development of the System Requirements Document.		
5.3.2	**Business Rules Development**		
753	The Contrator shall conduct Business Rules development workshops with the Commission to develop and document the Business Rules and operational policies for the In-lane Cashless Tolling Systems and the Cashless Toll Host System.		
754	The Business Rules workshops can occur concurrent to the System requirements reviews.		
755	The Contrator shall provide Business Rules utilized at other cashless tolling facilities; however, they shall be tailored to meet the Commission's requirements and shall comply with the Scope of Work.		

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756	The Contrator shall track the design, development and testing of the Business Rules through the RTM.		
5.3.3	**System Detailed Design Review**		
	Based on the RTM and Business Rules documents, the Contrator will Design the Cashless Tolling System and submit a preliminary Design document for the Commission to review and provide comments. The Contrator will then conduct a series of Design meetings with the Commission to address the comments and to create the System Detailed Design Document (SDDD), defining how the System Design will meet the Contract Requirements. Upon the submittal of an updated SDDD another review cycle will take place.		
757	The Business Rules document and the RTM shall be used to develop the System Design and the SDDD.		
758	The Contrator shall schedule Design meetings with the Commission to fully understand the Design Requirements.		
759	The Contrator shall support a phased Design process to support the multi-year implementation of the Cashless Tolling System on the Commission facilities. The Design process shall accommodate for the changes in technology that is inevitable given the duration of the Project.		
760	The Contrator shall demonstrate pre-production working products (such as, beta versions) during the Design review process, and stakeholders shall be walked through the workflow, utilizing screens and data flow diagrams.		
761	The Contrator shall explain how the System Design meets the RTM, the Business Rules and the Contract requirements.		
762	The Contrator shall conduct as many meetings and submission review cycles as deemed necessary by the Commission to address all Design issues to the Commission's satisfaction.		
5.3.4	**Reports Design Workshops**		
	The Contrator will conduct a series of workshops with the Commission to facilitate the Design of the Cashless Tolling System reports. The existing reports are provided in Attachment 9: Existing PTC Host Reports and these shall be used as a basis for the workshops along with the applicable Contract requirements.		
763	The Contrator shall employ an effective and productive methodology for Designing and finalizing the reports for the Project.		
764	The reports Design process shall be iterative and the Contrator shall conduct multiple workshops with the Commission's stakeholders, and Contrator shall bring subject matter experts to the meeting.		
765	Subject matter experts must provide a means for explaining each report, its intended purpose, columns, fields and components and its connection with other reconciling and validating reports.		
766	Report templates from existing operational systems shall be submitted and changes to meet the PTC Cashless Tolling System requirements shall be noted. Sample reports shall have correct and accurate data and shall reconcile across other reports.		
767	Upon receiving feedback from the stakeholder, the Contrator shall develop/modify the reports and resubmit the updated reports for review.		
768	The modified and new reports shall be demonstrated to the Commission using accurate and reconciled data. Reports that are expected to reconcile to one another shall be demonstrated together.		
769	The iterative series of workshops and demonstrations shall continue until baseline reports are Approved by the Commission.		
770	The Approved baseline reports shall be used as the basis for the Design document.		
5.3.5	**Software Walkthrough**		
	The intent of the Software walkthrough is to provide an overall status on the Contrator's Software development progress to ensure the Contrator is on track to deliver the Project on schedule and to obtain the Commission's feedback on the direction of the development prior to the full rollout of the Software.		
771	The Contrator shall conduct a series of Software walkthroughs including product demonstrations to solicit input from the Commission during the development of the Cashless Tolling System.		
772	Prior to the Software walkthrough, the Contrator shall develop and submit the use cases that will be demonstrated to the Commission for review and Approval. The walkthrough shall follow the process flow and emulate normal operations.		
773	The product shall be demonstrated in a test environment that allows data to flow as it will in the final integrated System.		
774	The Software walkthrough shall demonstrate to the Commission that the developed Software product meets the technical and functional Requirements of the Contract.		
775	Comments and feedback provided during the Software walkthrough shall be documented and resolved by the Contrator and the resolution shall be Approved by the Commission.		
776	The Contrator shall be responsible for identifying and correcting any Software issues or defects in its Design or product that impact the Contrator's ability to deliver the Cashless Tolling System that meets the Contract requirements. This shall apply to issues or defects found during or after Software walkthrough or in the subsequent testing and Implementation. Any such changes shall be Approved by the Commission in writing.		
5.4	**Documentation**		

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	The Contrator is required to provide various Hardware; Software; Requirements; Business Rules; Design; testing; installation, and Maintenance documentation that include Contrator-developed documentation and third-party documentation. All documentation provided under this Contract shall meet the requirements described below.		
777	The Contrator shall provide and maintain an online, electronic document management system in a central location that is accessible to the Commission by username and password, to control all Project-related documents, submissions and drawings in accordance with the Commission ECO process as defined in Attachment 13: ETC System Change Control Procedures V1.6 (or the latest Approved version per PTC) for the term of the Contract.		
778	The electronic document management system shall be indexed and searchable.		
779	All Project documents submitted under this Contract shall be available to the Commission using the online, electronic document management system provided by the Contrator at all times.		
780	The Contrator shall maintain a deliverable tracking list that accurately tracks all Contrator submissions; the Commission's comments review documents; resubmissions and final Approval.		
781	Each document shall be properly titled, date updated, numbered by revision and version, and shall incorporate signature blocks for authorship and Approvals. The Contrator shall provide a logical indexing system for ease of access for the Commission to locate documents in the electronic document management system.		
782	Updated submissions of the document shall also include the red-lined version showing all revisions to the document since the last submission.		
783	The Contrator shall utilize acceptable standards agreed upon by the Contrator and the Commission when updating documents and submitting revisions.		
784	All documentation submitted by the Contrator under this Contract shall be accurate and comply with Contract requirements. All deliverables shall be submitted in accordance with the Approved Project schedule.		
785	A Table of Contents, for all documentation that requires one, shall be submitted by the Contrator to the Commission for review and comment prior to the submission of the preliminary draft.		
786	The Contrator shall submit a minimum of: a preliminary draft, a final draft and a one hundred (100) percent final to the Commission for review and comment. All final documents shall incorporate all the Commission's review comments to the Commission's satisfaction. Each subsequent submission of a deliverable shall also include the Commission's comments review log with the resolution of each comment updated by the Contrator.		
787	The Commission shall have the right to require additional interim drafts from the Contrator at no additional cost should the draft documentation submitted not be of adequate quality, have missing or incorrect information or if it does not satisfactorily address the Commission's review comments.		
788	The Commission shall review and Approve all documents submitted under the Contract. For documents containing less than one hundred (100) pages, the Commission will review and provide comment on preliminary draft documents within ten (10) Business Days. For documents containing more than one hundred (100) pages, the Commission will review and provide comment on preliminary draft documents within fifteen (15) Business Days. The Commission will review and provide comment on all final draft and final documents within ten (10) Business Days. When multiple documents are submitted to the Commission simultaneously, or within one week of each other, the number of Business Days required for review shall be adjusted to reflect the overlapping submissions.		
789	The Commission will provide the Contrator with written comments on all submitted documents, and the Contrator shall respond in writing to all comments. A meeting may be conducted to clarify and resolve any remaining questions and issues concerning the comments and responses provided. The Contrator shall prepare a revised version of the document for Approval by the Commission.		
790	The Contrator shall submit the electronic version of all Contrator developed documentation for the Commission review and Approval. Acceptable electronic formats are Microsoft Office 2010 Suite (or higher), unsecured Portable Document Format (PDF) and professional CAD applications for Contrator-prepared documentation.		
791	The Contrator shall update documentation as changes occur through the Implementation Phase (and the Maintenance Phase) and shall maintain a document submittals list on the electronic document management site identifying all versions of documents, the date submitted, the nature of changes and provide relevant updates to the Commission as they are published.		
792	The documentation package for all submittals as applicable shall include all required electronic media to install, operate and maintain the System/Deliverable/document being supplied.		
5.4.1	**Requirements Traceability Matrix (RTM)**		
793	Upon completion of the Requirements and Business Rules review process the Contrator shall deliver a Requirements Traceability Matrix (RTM) that details all the technical and functional Requirements for the Cashless Tolling System.		
794	The RTM shall build on the specifications documented in the CSWRD and shall capture all user needs identified during the Requirements Business Rules review process.		
795	Upon Approval of the RTM, this document shall be the basis for functional verification Design, development and testing.		
796	During the Design and development of the Software, the Contrator shall update the RTM to reflect any changes to the Requirements that have been Approved by the Commission.		

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797	During Design and testing, the RTM shall be used to verify the System compliance to the Contract requirements and test procedures.		
798	All changes to the System requirements during the course of the Project shall be tracked through the RTM.		
799	The RTM shall include:		
	· listing and categorization of all functional requirements;		
	· listing and categorization of all Software related technical requirements;		
	· identification of the source of all requirements;		
	· identification of the Design section of the SDDD that addresses the Requirement and		
	· identification of the test procedure that addresses the Requirement.		
5.4.2	**Business Rules Document**		
	As an outcome of the Business Rules workshops and review meetings, the Contrator will provide a Business Rules Document.		
800	The Contrator shall submit a Business Rules Document that includes but is not limited to:		
	· detailed Business Rules for all aspects of the System, including policies and processes developed by the Contrator and Approved by the Commission;		
	· detailed description of all System Configurable options, ranges and thresholds (Configurable within the System or Configurable by Authorized User) for each business rule (if applicable);		
	· categorization of all Business Rules, providing indication for the source of the business rule;		
	· cross-referencing of all Business Rules to the underlying Requirements and		
	· System and operational impacts of each business rule.		
5.4.3	**System Detailed Design Document**		
801	The Contrator shall develop and submit a System Detailed Design Document (SDDD) that describes the Design specifications of all Hardware and Software provided as part of the Cashless Tolling System to meet the Approved Contract requirements. The SDDD shall demonstrate that the Contrator understands the functional, technical and performance requirements of the Cashless Tolling System and has the processes, Hardware and Software Design in place to provide a high-quality and reliable product that meets the requirements of the Contract.		
802	The SDDD shall be clear, well-written and organized into volumes to manage the submission and review process.		
803	The SDDD shall include the use of diagrams, figures and tables, and it shall apply to all environments, including primary and secondary production and testing environment.		
804	The SDDD shall include but not be limited to:		
	· System architecture, including overall System Design concept;		
	· in-lane Equipment layout for each zone type,		
	· lane layout electrical and logic diagrams;		
	· toll equipment building equipment rack layout and interconnections;		
	· data backup Systems Design, including sizing and processing calculations;		
	· the Requirements for all peripheral device Interfaces and control;		
	· server Design, including sizing and processing calculations;		
	· storage system Design, including sizing and processing calculations;		
	· network sizing and Design details including IP scheme and		
	· space Requirements;		
	· power Requirements;		
	· degraded mode of operations and impacts of failures on System operations;		
	· UPS sizing information detailing all Equipment on the UPS(s) and their total power Requirements including all Commission communications equipment regardless of purpose;		
	· detailed database Design, schema and entity relationship modeling, including sizing and processing calculations;		
	· high System availability Design, including Servers, storage, network, database and application;		
	· Disaster Recovery Design, including Servers, storage, network, database, data resiliency and application;		
	· Hardware dependencies and inter-dependencies;		
	· detailed infrastructure Software Design,		
	· detailed operating systems Design;		
	· detailed primary and secondary locations rack and server placement Design;		
	· detailed desktop computer Hardware configurations;		
	· detailed desktop computer Software configurations;		
	· detailed desktop peripherals configurations, including Requirements for all peripheral device Interfaces and control;		
	· all internal System Interfaces;		
	· all custom developed Software;		
	· all Software provided by the Contrator or a third party;		

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	· Software dependencies and inter-dependencies;		
	· data flow diagrams, state diagrams and data queues;		
	· Module level descriptions and interaction among various Modules;		
	· detailed description to the Module and/or process level for all of the functions according to the functional Requirements of the System;		
	· lane logic and vehicle framing design and rules with illustrations;		
	· degraded mode of operations and impacts of failures on System operations;		
	· transaction audit and pre-processing;		
	· transaction processing Design, including sizing and processing calculations;		
	· detailed Interface specifications between all Software components;		
	· Design of all System Interfaces (both sides of the Interface), including electronic Interface to the PTC Toll Host system, SAP and the existing CSC/VPC system.		
	· formal and standard Interface Control Documents for documenting both sides of the Interface for all interfaces;		
	· detailed data management Design and processes, including summarization, archiving and purging;		
	· all user Interfaces (including reports and screen formats);		
	· System data dictionaries;		
	· application performance monitoring Design;		
	· access/identity security methodology;		
	· security access system layout and interconnections;		
	· cabinet interconnection diagrams;		
	· environmental specifications;		
	· specification sheets for all Equipment;		
	· complete Bill of Materials, including Hardware, Software and support/Maintenance agreements;		
	· A logical division and an index of all contents within the SDDD.		
805	Upon the completion of the Software development, and prior to transitioning the Cashless Tolling System, the Contrator shall submit the Final Updated SDDD that includes all changes/clarifications made during the Software development and testing phases.		
5.4.4	**Cashless Tolling System Installation Design Requirements Package**		
806	The Contrator shall prepare and submit the Cashless Tolling System Installation Design Requirements and Documentation package to the Commission for review in accordance with the Approved Project Schedule.		
807	The Contrator shall secure the services of a fully qualified engineering design firm(s) for the purpose of providing electrical, mechanical, structural oversight, and documentation Approval for all installation drawings where applicable.		
808	All drawings shall be sealed, stamped, and certified by a Licensed Engineer of the appropriate discipline valid in the State of Pennsylvania where applicable.		
809	The Contrator shall develop a full size (24" by 36") set of drawings providing sufficient and accurate detail to install the System components.		
810	Sealed, stamped, and certified drawings shall be provided for each site where Equipment shall be installed.		
811	In addition, the drawing shall contain notes and other detail defining specific processes that cannot be graphically depicted. The notes shall also be used to delineate specifications, tolerances, special conditions, or any other factor required to install and integrate a fully functional System.		
812	The drawings shall include but not be limited to the following:		
	· lane geometry and dimensions of actual size and placement of all Cashless Tolling In-lane Equipment;		
	· Equipment bracket mounting detail to the mounting point, including how the mounts will be brought on the platform for Maintenance, if applicable;		
	· specifications and tolerances;		
	· conduit and cable schedule showing all conduits, cables and wires used for the Cashless Toll Zones;		
	· placement of in-road components;		
	· size and depth of loop cuts;		
	· loop tolerances (such as induction, resistance, impedance, Q factor, if applicable);		
	· any specific infrastructure limitations (for example, proximity of rebar);		
	· any specific requirement of how the loop cable is placed into the cuts;		
	· all homeruns from loops;		
	· any cable twist requirements for loop homeruns;		
	· placement of overhead sensors;		
	· details describing termination process for each termination;		
	· lightning and surge suppression system;		
	· a graphical diagram of the network connectivity and data flow;		
	· detailed interconnection diagrams for all Systems;		

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	· detailed electrical schematics, and		
	· detailed communications layout.		
5.4.5	**Cashless Toll Host System Installation Design and Documentation**		
813	The Contrator shall prepare and submit the Cashless Toll Host System Installation Design and Documentation package to the Commission for review in accordance with the Approved Project Schedule.		
814	The Contrator shall develop a full size set of drawings (24'' by 36") providing sufficient and accurate detail to install the System components.		
815	The drawings shall include but not be limited to the following:		
	· detailed interconnection diagrams for all Systems;		
	· detailed electrical schematics;		
	· detailed communications layout;		
	· UPS sizing specifications;		
	· Equipment rack layout, including power panels and connection to the UPS;		
	· a detailed diagram of the network connectivity, including IP scheme;		
	· server set-up and configuration;		
	· other vToll Host System Hardware installation and connections and		
	· floor loading calculations.		
816	The Contrator shall provide the installation Requirements for the Equipment, including all related Plans and documents. The Contrator shall certify the installation Requirements provided as accurate and appropriate for its intended purpose, to the satisfaction and Approval of the Commission.		
817	The Contrator shall submit Server room drawings that show the location of the Equipment racks for all Cashless Toll Host System Equipment at the primary facility. The layout of the Server components, storage devices and communication Equipment inside the cabinets shall be clearly presented with actual measurements shown.		
818	The Contrator shall submit Server room drawings that show the location of the Equipment racks for all Cashless Toll Host System Equipment at the Disaster Recovery facility. The layout of the Server components, storage devices and communication Equipment inside the cabinets shall be clearly presented with actual measurements shown.		
819	The Contrator shall develop and submit to the Commission a full size (24" by 36") set of drawings, providing sufficient and accurate detail to install the System components.		
820	The Contrator shall submit UPS sizing information for the primary and Disaster Recovery facilities, detailing all Equipment on the UPS and their power specifications.		
821	The Contrator shall submit detailed network drawings showing all WAN, LAN and VLAN connections, including all interface connections and IP addresses for all Equipment on the network.		
822	The Contrator shall submit detailed Server configuration instructions, including the configuration of storage devices, backup devices and network connectivity.		
5.4.6	**Quality Assurance Plan**		
823	The Quality Assurance (QA) Plan that details the Contrator's QA Program shall be submitted to the Commission for review and Approval in accordance with the Approved Project Schedule.		
824	The QA Plan shall include the Contrator's QA Program through planning, documentation; Design; Development; production; purchasing; testing; and installation of all Hardware and Software provided under this Contract.		
825	The Quality Assurance Plan shall describe the quality assurance procedures and methodology for the Project, including but not limited to:		
	· quality management and organizational structure;		
	· System Design;		
	· Software development and defect management;		
	· installation including civil installation sign-off;		
	· Equipment purchase, delivery and validation;		
	· inspection and verification for in-process, final assembly, unit tests and System testing;		
	· configuration management;		
	· change management and change control process;		
	· training and safety;		
	· quality management documentation;		
	· transition;		
	· compliance to Contract Requirements;		
	· quality review and verification and		
	· reporting and metrics.		
5.4.7	**Software Development Plan (SDP)**		
	The Contrator shall develop and submit a Software Development Plan (SDP) that includes but is not limited to:		
	· documentation of the Software development approach to the application architecture, behavior, architecture, business processes, security and data structures;		

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826	· approach System Design and Development given the Cashless Tolling System Project phasing;		
	· development resources and responsibilities, such as Software developers, system engineers, security engineers, test engineers, Quality Assurance and control personnel, configuration management administrator, documentation specialists and Project management staff;		
	· describe natural segregation of development areas or teams, such as development of user Interfaces, development of reports, development of the functionality and development of Interfaces;		
	· Software development standards;		
	· security standards;		
	· Software development methodology, such as use cases, modeling and other development tools;		
	· Software development language strategy, platforms and technologies related to both development and Software Maintenance;		
	· description of the Software Development Life-Cycle and Maintenance;		
	· approach to segregation of environments (development, testing and deployment) and the number of environments;		
	· Maintenance of standard and baseline codes and management of major releases;		
	· gap analysis of baseline code to Contrator Requirements;		
	· development problem reporting, defect tracking and remediation;		
	· code reviews and code development standards;		
	· source control;		
	· informal and internal testing methodology;		
	· regression testing and security and vulnerability testing;		
	· development and integration approach for the major functional modules;		
	· Software Quality Control processes;		
	· Software end-user documentation review and usability;		
	· development documentation;		
	· technical Software code documentation and standards for all code;		
	· Software configuration and change management approach and standards;		
	· samples of detailed Software documentation for both external and in-line documentation;		
	· Software deployment approach, release management and validation and		
	· detailed documentation of the development environment, including enough information that the environment could be completely replicated.		
5.4.8	**Master Test Plan (MTP)**		
827	The Contrator shall provide to the Commission, for review, comment and final Approval a Master Test Plan (MTP) that outlines the scope and testing concepts to be used to administrator each test identified in the Contract. The MTP shall document the methodology used to validate the Cashless Tolling System compliance to the requirements and demonstrate the Cashless Tolling System satisfies Technical, Functional and Performance Requirements.		
828	The Approved Master Test Plan shall be used as the basis for the detailed test procedures that shall be submitted to Commission for review and Approval.		
829	The Master Test Plan shall cover all aspects of the In-lane Cashless Tolling System and the Cashless Toll Host System testing from initial development through deployment, tolling point Acceptance and Project Acceptance, including but not limited to:		
	· overall approach to testing;		
	· approach to each informal and formal testing;		
	· approach to creation of data set for each test;		
	· Software test automation tools utilized for each test;		
	· approach to validating all System requirements through the testing methodology;		
	· describe the entry and exit criteria for each test;		
	· document the severity and priority descriptions and levels for each test;		
	· include a detailed schedule for each test identifying each test activity and resource;		
	· describe the methodology for testing the performance requirements and sample size for each phase of testing;		
	· describe the methodology for load testing;		
	· describe the purpose; scope; duration; System resources, and human resources for all tests;		
	· approach to validating all reporting Requirements;		
	· approach to end-to-end testing, validation and Reconciliation;		
	· approach to interface testing and compliance to standards,		
	· document how defects will be triaged; tracked; reported; resolved, and retested, including tools used to document defects, and		
	· a set of regression test procedures that will be exercised each time Software changes are made after the Approval of the FAT.		

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830	The Contrator shall provide detailed test procedures for the Commission's Approval for each test outlined in the Requirements and Approved MTP, including but not limited:		
	· test logistics including test vehicles; drivers and test equipment;		
	· test scenarios;		
	· detailed test steps with expected outcomes;		
	· test entry and exit criteria;		
	· test preparation;		
	· test data creation;		
	· periodic status meetings;		
	· all necessary human resources and		
	· all necessary Hardware and Software.		
831	The Commission's Approval of any aspect of testing shall not relieve the Contrator of its responsibility to meet the full requirements of the Contract.		
832	The Contrator shall update the RTM linking every Requirement to a set of test cases to demonstrate the Requirement has been satisfied and which test satisfied the Requirement.		
5.4.9	**Maintenance Plan**		
	The Contrator shall submit Maintenance Plans listed below that describes how the Contrator plans to facilitate the Commission in performing the Maintenance of the Cashless Tolling In-lane Systems, Cashless Toll Host System, and all Hardware at the toll equipment building in accordance with the requirements of the Contract. The Contrator shall have appropriate documentation available to all Maintenance and Software Support personnel, as required to perform their respective duties.		
5.4.9.1	**System Maintenance Plan**		
833	The System Maintenance Plan defines the approach to Services, staffing and resources to fulfill the System Maintenance requirements. The Plan shall include:		
	· organizational structure, organizational chart and job descriptions and responsibilities;		
	· detailed matrix of responsibilities (Commission and Contrator);		
	· staffing plan;		
	· approach to staffing and training;		
	· detailed System monitoring requirements;		
	· coverage and personnel locations;		
	· third party System support agreements overview;		
	· schedule of all System Maintenance activities;		
	· all System Maintenance related communication methods;		
	· Maintenance procedures, communication Protocols and approval processes for System upgrades, scheduled Maintenance activities, change management and scheduled downtime;		
	· Maintenance procedures and communications Protocols for unscheduled downtime;		
	· communication protocol for coordination with interoperable agencies and third-party entities;		
	· communication protocol for coordination with the Commission's existing Contrators;		
	· trouble reporting processes;		
	· escalation processes;		
	· spare levels and reorder thresholds, Equipment and Software warranty tracking and return material processes;		
	· monitoring the MOMS Dashboard;		
	· monitoring Maintenance performance for compliance to performance requirements;		
	· sample Maintenance reports;		
	· Equipment replacement/refresh schedule;		
	· upgrades to third-party Software and tools, and		
	· process in place to meet Maintenance performance requirements.		
5.4.9.2	**Software Maintenance and Warranty Plan**		
834	Software Maintenance and Warranty Plan shall define the approach to Services, staffing and resources to fulfill the Software Maintenance and warranty requirements including but not limited to:		
	· organizational structure, organizational chart and job descriptions and responsibilities;		
	· detailed matrix of responsibilities (Commission and Contrator);		
	· staffing plan;		
	· approach to staffing and training;		
	· approach to receiving and prioritizing Software defects (bugs);		
	· reporting, categorization, prioritization, remediation and disposition of Software defects;		
	· coverage and personnel locations;		
	· all Software Maintenance related communication methods;		

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834	· Maintenance procedures, communication Protocols and approval processes for Software upgrades, Software releases, testing, scheduled Maintenance activities, change management and scheduled downtime;		
	· Maintenance procedures and communications Protocols for unscheduled downtime;		
	· trouble reporting processes;		
	· escalation processes;		
	· sample Maintenance reports;		
	· Software updates and testing to comply with E-ZPass Group specification changes, and third party interface changes;		
	· Software and security updates, remediation and testing to be compliant to Commission Audit requirements, and		
	· process in place to meet Maintenance performance requirements.		
5.4.10	**Disaster Recovery Plan**		
	The Disaster Recovery Plan (DRP) shall be a comprehensive, documented statement of actions to be taken before, during and after a disaster to protect and recover the information technology data, assets and facilities of the Cashless Tolling System.		
835	The Contrator shall develop and submit a Disaster Recovery Plan (DRP) and subsequent Disaster Recovery Procedures that describe the approach, as well as activities and procedures that take place in the event of a disaster for each element of the Cashless Tolling System.		
836	The DRP shall document the Contrator's approach to recovering from a disaster, including but not limited to:		
	· events that constitute a disaster and party responsible for declaration of a disaster;		
	· assessment of disaster risks;		
	· mitigation of disaster risks;		
	· preparations in the event of a disaster;		
	· disaster declaration and Disaster Recovery process to invoke;		
	· organization chart illustrating Disaster Recovery team members, roles and responsibilities;		
	· notification contact list, including contact information;		
	· notification protocol;		
	· sites and Equipment for Disaster Recovery, presented in a diagram format;		
	· Disaster Recovery process initiation and completion checklist;		
	· Software and data replication processes;		
	· detailed logistical processes for activation of Disaster Recovery site and systems;		
	· detailed technical processes for activation of Disaster Recovery site and systems;		
	· detailed operational functions for activation of Disaster Recovery site and		
	· detailed technical processes for reactivation of primary site (or moving to a new primary site if the original primary site is destroyed), Operations and Systems.		
837	The DRP shall be tested no less than annually.		
838	The DRP shall include a Business Continuity Plan (BCP) that details the Contrator's approach to accommodating the personnel, Equipment, Systems, network, applications and data components required to ensure the resumption and continuity of critical Cashless Tolling System processes.		
839	The BCP, based on a Business Impact Analysis to assess the needs of the Commission business areas, shall include but not be limited to:		
	· Recovery Point Objective (RPO) maximum acceptable amount of data loss for all critical Cashless Tolling System services after an unplanned data-loss incident, expressed as an amount of time;		
	· Recovery Time Objective (RTO) maximum acceptable amount of time for restoring a critical Cashless Tolling System services and regaining access to data after an unplanned disruption;		
	· Level of Service (LOS) the combination of throughput and functionality required to sustain Cashless Tolling System business Operations and		
	· detailed description of how site and System security will be maintained to ensure continued compliance with security requirements.		
5.4.11	**Training Program and Plan**		
840	The Contrator shall develop and maintain a training plan, subject to Approval by the Commission.		
841	The training plan shall describe the plan for training new personnel and shall outline the required operational/maintenance and system knowledge for each position to be gained from the training. For each position/user type, the plan shall include a training instructor guide, training manual and other materials to be used in training. The plan also shall include a schedule for follow-up training and continuing education for staff.		
842	The training plan shall provide a plan for cross-training staff from other areas of operations or management for peak period, emergency or temporary assignments to provide for staff redundancy. The training plan also shall include the training schedule for regular staff training and continuing education/training.		

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843	The Contrator shall submit a training plan, in accordance with the Approved Project schedule, that describes the approach to training administrators, end users at different levels, Maintenance and support personnel, including but not limited to:		
	· overall description of the training program;		
	· training techniques;		
	· training delivery schedule;		
	· names and descriptions of each training class;		
	· purpose of each training class;		
	· who should attend the class;		
	· qualification Requirements for trainer;		
	· minimum qualifications for personnel attending the class;		
	· duration of the class;		
	· training materials, including syllabus, schedule, training goals, manuals, guides, other support materials and techniques to be used;		
	· data preparation, such as test Accounts and test transactions;		
	· required Equipment and		
	· facility Requirements.		
844	Courses shall be limited to a maximum of eight (8) hours per day.		
845	The Contrator shall be responsible for maintaining a training database baseline and supporting data files that can be restored at the beginning of each training session.		
5.4.12	**Third Party Documentation**		
	Third-Party documentation includes standard commercial documentation for third-party provided Hardware, Software, services and materials.		
846	The Contrator shall catalogue all third-party documentation and include the catalogue with the third-party document submissions.		
847	The Contrator shall provide and maintain standard, commercially available, updated documentation for third-party provided Hardware, Software, services and materials provided under this Contract. This set of third-party documentation shall be retained at the Commission offices for the duration of this Contract and upon termination of the Contract.		
848	All updated documents shall show the revisions and also include a version of the clean document.		
849	An electronic copy of all third-party COTS Hardware and Software installation and user manuals, with updates, shall be provided to the Commission. Acceptable electronic formats are Microsoft Office 2010 Suite or higher, unsecured Portable Document Format (PDF) and professional CAD applications.		
850	Documentation shall include sufficient detail to describe the configuration of the Software as it was installed by the Contrator for the Cashless Tolling System. These should include any customization or modifications made to the Software or configurations specific to the Commission environments.		
851	The Contrator shall provide all Hardware and Software installation and user manuals for custom-developed (non-COTS) third-party products and services in a printable electronic format.		
5.4.12.1	**Third-Party Software Documentation**		
852	The Contrator shall provide third-party Software documentation, including but not limited to:		
	· all user manuals;		
	· programmer's reference manuals;		
	· warranty documentation;		
	· installation manuals;		
	· Interface documents;		
	· Maintenance manuals and		
	· any other information required to utilize the Software, such as the operating system, utilities, programming languages, application Software and communications Software.		
853	The third-party Software documentation shall be provided by the Contrator electronically in a standard and organized format, with appropriate labels, tabs and cross references to allow the Commission to easily access and reference information on each Software component on the System.		
5.4.12.2	**Third-Party Hardware Documentation**		
854	The Contrator shall provide third-party Hardware documentation, including but not limited to:		
	· all technical manuals;		
	· operator's guides;		
	· installation guides;		
	· warranty documentation;		
	· Hardware reference manuals;		
	· available options and versions;		

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	· catalogs, components and		
	· illustrated parts lists.		
855	The Contrator shall provide all third-party Hardware documentation in a standard and organized format, with appropriate labels, tabs and cross references to allow the Commission to easily access and reference Hardware information on each Equipment component.		
856	Third-party Hardware documentation shall include sufficient detail to describe the configuration of the Hardware as it was installed by the Contrator for the Cashless Tolling System.		
5.5	**Manual Requirements**		
	Various manuals shall be provided as described below to allow the Commission to understand the operations of the Cashless Tolling In-lane System and Cashless Toll Host System. New manuals developed under this Contract that are not standard commercial catalogs or manuals, shall meet the Requirements set forth in this section.		
857	The Contrator shall submit the Project manuals to the Commission for review and Approval in accordance with the Approved Project Schedule.		
858	Whenever possible, all data shall be printed on 8-1/2" x 11" sheets; foldouts shall be 11" x 17".		
859	Each manual shall include, but not be limited to:		
	· a title sheet;		
	· revision history;		
	· Table of Contents;		
	· list of illustrations (if applicable);		
	· list of reference drawings and Exhibits (if applicable) and		
	· a parts list (if applicable).		
860	All manuals shall have a consistent look and feel and shall be professionally written and presented in clear and organized fashion.		
861	All manuals prepared for the Commission under this Contract shall be produced, or editable, using Microsoft Office 2010 Suite (or higher). In addition, electronic copies of manuals shall be provided in unsecured Portable Document Format (PDF), if requested by the Commission.		
862	Any special Software required to produce scalable typefaces or other graphs shall be provided by the Contrator as part of the documentation for the manuals.		
5.5.1	**Manual Submissions and Quantities**		
863	The Contrator shall submit electronic copies of all manuals listed below.		
864	All manuals shall be maintained in electronic format in the Contrator's document management system for the term of the Contract.		
865	The Contrator shall be responsible for producing a quantity of the manuals for the Contrator's use, sufficient to fulfill the Contrator's Requirements under the Contract.		
5.5.2	**Manuals to be Submitted**		
5.5.2.1	**Cashless Tolling Lane Maintenance Manual**		
866	The Contrator shall submit Cashless Tolling Lane Maintenance Manual prepared for properly trained technical personnel assigned to the Maintenance of the Hardware and Software installed under this Contract on the Commission cashless tolling lanes. All manuals should be used for the training sessions. It shall document information required to support cashless tolling lane Maintenance and repair activities, including but not limited to:		
	· lane Equipment layout for each Cashless Tolling Zone Type;		
	· schematics and layouts of the Hardware in the lane cabinets, equipment racks and the interconnection diagrams;		
	· parts lists required to service each piece of Hardware installed under this Contract;		
	· general and detailed description and concepts of lane operations and functions;		
	· detailed lane monitoring activities, specialty tools and schedule;		
	· detailed Software monitoring activities and troubleshooting procedures;		
	· Maintenance instructions to repair and replace parts and modules;		
	· mechanical functions and installation of all Hardware;		
	· listing of all event and error logs;		
	· testing and basic troubleshooting procedures, and		
	· preventive and corrective Maintenance procedures.		
867	Standard service manuals for commercial products used for the Equipment shall be acceptable if they contain sufficient information to properly service the Equipment.		
868	Large-size logic diagrams and mechanical assembly diagrams do not have to be reduced or incorporated into the manuals if these drawings are provided with the manuals and presented in a useable and durable form.		
869	Photographic documentation of Equipment with appropriate labels and call-outs are satisfactory if they contain sufficient information to properly identify components, parts and features.		
5.5.2.2	**Cashless Tolling System Monitoring Manual**		

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870	The Contrator shall submit the Cashless Tolling System Monitoring manual prepared for properly trained personnel assigned to monitoring the operations of the Cashless Tolling System including transmission of data and files to existing systems. All manuals should be used for the training sessions. It shall document information required to support Cashless Tolling System monitoring, including but not limited to:		
	· all Dashboards, monitoring screens, notifications and data that needs to be checked;		
	· listing of all jobs/process, their dependencies and their schedule;		
	· listing of all folders and directories that need to be checked;		
	· details related to the activity that needs to be checked;		
	· frequency of the validations;		
	· actions to take when results are not as expected;		
	· notification and escalation process;		
	· basic troubleshooting procedures, and		
	· creation of work orders in MOMS.		
871	Provide description about the tools and Software for personnel to record the monitoring activity and instructions to use the tools/Software.		
5.5.2.3	**Cashless Toll Host System Administrators Manual**		
872	The Contrator shall provide an Cashless Toll Host System Administration Manual that serves as a guide to the overall management and administration of the Cashless Toll Host System and shall include:		
	· description of the programs and processes that need to be monitored to ensure that the System is operational;		
	· procedures for validating tasks, processes and jobs have successfully completed, and errors and exceptions encountered;		
	· procedures for validating the successful transfer and receipt of files for all interfaces, including PTC Toll Host system and the existing CSC/VPC system;		
	· a listing of all the error codes, their meaning and potential associated problems shall be included in the manual, with a step by step guide to troubleshooting and correcting the problem;		
	· all database Design, and database Maintenance activities required to keep the System operational shall also be clearly documented, including the scheduling of such activities;		
	· detailed procedures for backup, archiving and purging data;		
	· detailed schedule for all preventative Maintenance activities;		
	· technical contact lists for Hardware and Software providers;		
	· details and copies of all third-party system support agreements and		
	· ad-hoc reporting tools and use of the tools to generate ad-hoc reports shall be documented, and		
	· details of monitoring tools supplied by the Contrator to include but not limited to MOMS Dashboards and MOMS.		
5.5.2.4	**Cashless Toll Host System User Manual**		
	The Contrator shall develop and provide a comprehensive set of system documentation and user manuals for the Cashless Toll Host System users. At a minimum, the documentation shall include all user and training manuals, a reports definitions and data flow diagrams.		
873	The Contrator shall develop and submit Cashless Toll Host System User Manuals to be used by Commission staff to operate the Cashless Toll Host System and for training purposes.		
874	The Contrator shall develop a separate manual for each job category that details all the processes, procedures and policies developed by the Contrator and Approved by the Commission required to fulfill the Requirements of each specific job description.		
875	Each Cashless Toll Host System User Manual shall include but not be limited to:		
	· screen images detailing the step-by-step activities needed to fulfill a specific functionality;		
	· flowcharts to provide Commission staff a clear understanding of the workflow;		
	· all screens, reports and data fields, clearly explained using sample formats applicable to the Cashless Toll Host System and		
	· samples of all reports, included in the manual or as an attachment to the manual, with any specific instructions that may apply to a given report.		
5.5.3	**As-Built Documentation**		
	Prior to the Commission Acceptance of each tolling location of the Project, As-Built documentation shall be provided that documents the final Cashless Tolling System Design and implementation.		
5.5.3.1	**System Detailed Design Document**		
876	After the Approval of the Operational Test and prior to the Commission Acceptance of the Cashless Tolling System, for each tolling location of the Project, the Contrator shall submit the As-Built System Detailed Design Document (SDDD) that includes all Software and Hardware changes made during the System development, implementation, and testing phases.		

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877	The Contrator shall submit an electronic version of the As-built SDDD in a printable format Approved by the Commission.		
5.5.3.2	**As-Built Drawings**		
878	The Contrator shall provide to the Commission a complete set of As-Built drawings which shall be delivered in a readily printable in full and half size formats from the electronic format Approved by the Commission for all Equipment installed and furnished under this Contract.		
879	As material changes are made to the System the Contrator will be required to update the as-built drawings to reflect the current status.		
880	The sets shall include, but not be limited to:		
	· all schematics;		
	· logic diagrams;		
	· layouts;		
	· wiring diagrams;		
	· interconnection diagrams;		
	· all attachment Hardware details;		
	· installation diagrams;		
	· cable schedule;		
	· Interface details;		
	· facility build-out details and		
	· network diagrams, so as to provide a complete record of the as-built status of the Equipment.		
881	All drawings for revisions to standard commercial assemblies or components for the Equipment shall be included in the As-Built drawing set.		
882	All As-Built drawings shall contain a table of contents that shall include a listing of all drawings with headings for drawing number, drawing title, revisions number and date, and the type of material list, wiring diagram, wire list, specification control drawing, or similar categories.		
883	The Contrator shall update the latest drawings with red lines as changes are incorporated during the installation process. At the completion of the installation, the Contrator shall gather all red line drawings.		
884	The red line drawings shall be verified and incorporated into a final as-built drawing package. This final as-built package shall include all updated installation drawings, shop drawings and sketches, Plans and other drawing types that were used to install the Cashless Tolling System.		
885	All other documentation used regarding the installation also shall be finalized and submitted as part of the as-built submittal.		
5.6	**Quality Assurance Program**		
	The Contrator shall establish and maintain an effective Quality Assurance (QA) program on all aspects of the Cashless Tolling Project to ensure compliance with the Contract. This Quality Assurance Plan will detail the process and procedures instituted by the Contrator to ensure the QA program is in place.		
886	The Contrator shall establish and maintain an effective Quality Assurance (QA) program that ensures adequate quality throughout all areas of Cashless Tolling Project Contract performance.		
887	All supplies and services under this Contract, whether manufactured or performed within the Contrator's facilities or at any other source, shall be controlled by the Contrator at all points necessary to ensure conformance to the requirements of the Contract.		
888	Purchase, delivery, verification, testing and assembly of Equipment, Hardware and Software conducted within the Contrator's facilities and on-site shall be controlled completely by the Contrator.		
889	Delivery, verification, testing and assembly of Servers and network Equipment conducted within the Contrator's facilities shall be controlled completely by the Contrator.		
890	The QA program shall provide for the prevention and ready detection of discrepancies and for timely and positive corrective action.		
891	The QA program shall include effective Quality Control of purchased materials and Subcontracted Work.		
892	The Contrator shall make objective evidence of quality conformance readily available to the Commission, and the Commission shall have the right to review and verify the Contrator's compliance to the process.		
5.6.1	**Records**		
893	The Contrator shall maintain records or data essential to providing objective evidence of quality until the expiration of the Contract and these records shall be made available to the Commission upon request.		
894	Quality-related records and data shall include but not be limited to:		
	· inspection and test results;		
	· records of SubContrator QA programs;		
	· cost records pertinent to Acceptance of nonconforming material;		
	· inspection check-off of civil Contrators work;		
	· change request documentation;		

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	· Design reviews and walkthroughs and		
	· results of internal and Contrator audits.		
895	Records shall be maintained in a manner that shall allow for access and analysis of the status of the overall QA Program and in a format as defined in Section 5.4 Documentation.		
5.6.2	**Control of Purchase**		
896	The Contrator shall be responsible for ensuring that all supplies, components, developmental tools, assemblies, subassemblies, and Services procured from SubContrators and vendors conform to the technical requirements and Contract.		
897	The Contrator shall have a quality control process in place for tracking and handling non-conforming Equipment and products.		
898	The Contrator's responsibility includes the establishment of procedures for the selection of qualified Suppliers. In selecting qualified Suppliers, the Contrator shall ensure that the SubContrators and vendors control the quality of the supplies and Services provided.		
5.6.3	**Handling, Storage and Delivery**		
899	The Contrator shall document the approach to assembly of the Equipment, including the location where Equipment and Systems are assembled.		
900	The Contrator's QA Program shall provide for adequate and documented handling, storage, preservation, packaging, and shipping instructions to protect the quality of products.		
901	Commission assets, as defined by the Commission during the design process, shall be tracked and entered into the MOMS inventory and the cost and location of each asset shall be recorded.		
902	All assets designated by the Commission shall have an inventory tag or labeling mechanism for the electronic data entry and tracking of Commission equipment by location and cost within the MOMS, subject to Approval by PTC during the design process. The tagging or labeling mechanism shall be readily and efficiently available to Authorized staff and automatically updated in MOMS.		
903	Any unique or special requirements applicable to procured items shall be delineated in the procurement documents. All procurement documents shall be made available to the Commission upon request.		
5.6.4	**Inspection at SubContrator-Vendor Facilities**		
904	The Commission reserves the right to inspect, at the source, supplies or services not fabricated or performed within the Contrator's facility.		
905	The Commission's inspection shall not constitute acceptance, nor shall it in any way replace the Contrator's inspection activity or relieve the Contrator of the responsibility to furnish an acceptable end product.		
5.6.5	**Access to/Inspection of Contrator's Facilities**		
906	Upon request, the Commission or its designated representative shall have access to the Contrator's facilities and personnel.		
907	This access may be restricted to those portions of the facilities and personnel involved with or who are otherwise performing Work under this Contract.		
908	Such access shall be for the purpose of inspecting the facilities; verifying progress; inspection of materials; Work-in-progress; or finished goods, or verifying test performance or results.		
909	The Commission's inspection shall not constitute Acceptance or Approval, nor shall it in any way replace the Contrator's inspection activity or relieve the Contrator of the responsibility to furnish an acceptable end product.		
5.7	**Cashless Toll Host Training**		
	The Contrator shall provide comprehensive training for all aspects of the Cashless Tolling System, including but not limited to the operations, system monitoring, problem detection and resolution, audit, and Maintenance of the Cashless Tolling System. The training program will recognize and incorporate the plan for the Commission to perform Level 1 maintenance (as defined in Section VII: Maintenance and Software Services) of the Cashless Toll Host System. As such Commission technical staff will be fully trained to successfully coordinate all maintenance activities with the Contrator and to perform Level 1 Cashless Toll Host System maintenance.		
5.7.1	**Overview of Training Program**		
910	The Contrator shall be solely responsible for supplying all items necessary, including but not limited to training documentation, Software, Hardware and any other Equipment required to complete the delivery of the training program.		
911	The Contrator's program shall include but not be limited to instruction, models, manuals, diagrams and component manuals and catalogs as required.		
912	Where practical and useful, the Contrator's training shall be hands on and use actual Cashless Toll Host System Software in the training environment.		
913	The Contrator shall produce all training materials and manuals of the latest documentation in electronic form to be used and printed for future training sessions.		
914	The Contrator shall record training sessions to allow the Commission employees to remotely attend training sessions using WebEx or other online tool.		

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915	The Contrator shall ensure the Commission or their representatives have the right to attend any training sessions and to make video and audio recordings of training sessions and copies of all training program materials for their use in training new employees.		
916	The Contrator shall obtain releases from all employees/SubContrators to allow unlimited, royalty free use and copies of personal identity information (PII) compliant recordings and provide the same to the Commission upon request.		
5.7.2	**Training Requirements**		
917	The Contrator shall provide the following training courses for the Commission's personnel, including but not limited to the provision of all training manuals (including Contrator- provided manuals or relevant portions thereof), guides, training aids, as well as student and instructor work books accompanying the courses listed in the sections below.		
918	The Commission may require additional courses be offered or additional personnel be provided training. The Contrator shall accommodate these requests to the extent possible with on-site personnel and documentation that is readily available.		
919	Lane level training shall include an overview of generation of subsystem events and creation of transaction data and their flow through the System.		
920	All Cashless Toll Host System training shall include a review and description of each of the appropriate Cashless Tolling System processes and procedures with actual Cashless Toll Host System Software. All students shall have their own workstation and interact directly with the training environment.		
5.7.2.1	**System Operation Overview**		
921	The Contrator shall provide a System operation overview training course for the Commission's management personnel who require a general understanding of all aspects of the operation, including but not limited to personnel from senior management, procurement, information technology, marketing and public information.		
922	The system operations training shall include an overview of all aspects of the Cashless Tolling In-lane System and Cashless Toll Host System including DVAS, MOMS, cashless tolling operations, interface to the PTC host system, existing CSC/VPC system, System Maintenance, network, and any other operational area of the Cashless Tolling System.		
923	System Operation Overview training will be conducted in one session with a minimum class size of ten (10) people, for a minimum of eight (8) hours.		
5.7.2.2	**Audit and Reconciliation and Cashless Toll Host System Operations**		
924	The Contrator shall provide an audit and reconciliation training course for the Commission's auditing staff to understand all aspects of the operation, particularly those related to reconciliation, audit and management.		
925	Course shall include training all personnel who require a detailed understanding of the operations of the Cashless Toll System and how to access and view information and reports from the System on items such as status, alarms, performance, transactions and revenue.		
926	Audit and reconciliation training will be conducted in one (1) session with a minimum class size of five (5) people, for a minimum of four (4) hours.		
5.7.2.3	**System Monitoring Staff Training Program**		
927	The Contrator shall ensure the System monitoring staff (PTC Operations Group) are properly trained in the requirements of monitoring the Cashless Tolling System and its uninterrupted operations.		
928	Training on the Cashless Toll Host System shall focus on the Commission performing Level 1 Maintenance.		
929	The Contrator shall provide a minimum of one (1) weeks of classroom and on-the-job training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned monitoring duties.		
930	The Contrator shall provide documentation this initial training has been successfully completed.		
931	The Contrator shall provide various training programs that include but are not limited to: · an in depth explanation of the Cashless Tolling Operations, including all Interfaces, file/data transfers and interconnections; · functions of the monitoring and tools used to manage monitoring tasks; · functions of the MOMS; · Cashless Toll Host System logs, error logs and processing of exceptions; · system dataflow and workflow queues; · explanation of the Dashboard data and analysis; · special use and monitoring tools and · queries and reports.		
932	All System monitoring personnel shall attend the training sessions. The Commission's technical staff also shall attend all training sessions.		
933	The Contrator shall keep accurate training records on all Maintenance and Software support services personnel. The Commission shall be permitted to review and verify Maintenance and Software support services personnel qualifications and training records at any time. Evidence of completion of training by Contrator personnel shall be provided to the Commission upon request.		
5.7.2.4	**Cashless Toll Host System Administration**		

Functional Requirements			
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934	The Contrator shall provide a System Users training course for all personnel who require a detailed understanding of the management, troubleshooting and administration of the interfaces, Software, database, applications, configurations and architecture of the Cashless Toll Host System.		
935	Cashless Toll Host System Administration training will be conducted in one (1) session with a minimum class size of five (5) people, for a minimum of eight (8) hours and on-the-job training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned administration duties.		
5.7.3	**Training Facilities**		
936	The Contrator shall conduct training at the classroom facilities at the Commission administrative building for all training and at designated locations identified by the Commission. Following review of Contrator's Training Plan, the Commission will confirm that it has the requisite space to accommodate the level of effort and physical requirements for each training session.		
5.7.4	**Scheduling and Preparation for Training**		
937	It shall be the Contrator's responsibility to provide sufficient notice to the Commission on the types of training it will provide and the timing for each training session. The Commission will identify a list of participants that Contrator shall notify to schedule their participation in the training.		
938	The Contrator shall perform all scheduling activities and shall make every attempt necessary to accommodate the maximum number of persons for each training session given scheduling conflicts. Contrator shall provide sufficient notice to allow participants a reasonable lead time.		
939	The Contrator shall notify the Commission of the dates or range of dates it would like to hold a training session at the Commission offices and shall coordinate with the Commission Information Technology (IT) office and Administrative Services staff to arrange the proper classroom setting and computer Hardware and Software are installed and the space configured for each training session.		
5.7.5	**Training Materials**		
940	Draft copies of all training materials shall be submitted to the Commission for review, comment and Approval, prior to final printing of quantities required for training.		
941	The Commission shall have the right to require additional interim drafts at no additional cost should draft training materials submitted not be of adequate quality or have missing or incorrect information.		
942	For each course described in the section above, Contrator shall provide the materials listed below.		
5.7.5.1	Instructor Guides		
943	The Contrator shall provide an instructor guide for each training course. The guide shall include the following elements:		
	· course agenda;		
	· course objective;		
	· procedures for managing training session;		
	· resource and facilities required, including work stations, power and communications requirements;		
	· detailed lesson plans;		
	· a description of training aids and items to aid in on the job performance (e.g., where applicable, pocket guides or reference sheets);		
	· test to be administered to assure satisfactory completion;		
	· instructions for using any audio-visual support Equipment or materials and		
	· student survey to obtain feedback on the training sessions and the training materials.		
5.7.5.2	Training Aids		
944	The Contrator shall provide training aids such as mock-ups, scale models, overhead displays, video demonstrations, and simulations as are necessary to successfully complete the course agenda and meet the course objective.		
945	The Contrator shall provide users a way to access training documents, aids and tips in an online, electronic format.		
5.7.5.3	**Student Workbook**		
946	For each course, the Contrator shall provide a student workbook, including but not limited to:		
	· course agenda;		
	· course objectives;		
	· schedule of sessions;		
	· copies of all overheads and visuals and		
	· lesson outlines and summaries.		
947	Materials such as operations and user manuals may be used to supplement the material provided in the student workbook.		
948	To the extent that the user manuals (and training aids) are appropriately detailed and fit for training purposes they shall be used for training. If the Commission deems they are not sufficiently detail then supplementary training material shall be provided.		
949	If such material is used appropriate cross-references shall be included in the Student Workbook so as to identify the complete set of training materials provided to the student.		

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5.7.6	Training Room Set-up and Software Installation		
950	Contrator shall be responsible for loading any special Software required on the classroom computers (provided by the Contrator).		
951	It is the Contrator's responsibility to ensure that the Software is operating as expected on each of the classroom computers.		
952	It is also the Contrator's responsibility to ensure that appropriate communications are in place.		
VI	Cashless Tolling System Testing Requirements		
6.1	Cashless Tolling System Testing Concept		
	The Commission has employed a phased approach to deploying cashless tolling on the Commission toll facilities. Given the extended duration of the Project, and the potential differences in the various In-lane System solutions, the Contrator shall conduct the following tests.		
953	Various tests (outlined for reference immediately below and with detailed Requirements in subsequent sections) shall be prepared and conducted by the Contrator, including but not limited to:		
	· factory acceptance test (FAT)		
	· onsite first installation test (OFIT) at baseline tolling points;		
	· installation and Commissioning test at baseline tolling points;		
	· Operational and Acceptance test at baseline tolling points, and		
	·		
6.1.1	General		
	The Requirements described in this section detail the labor, materials, facility, and support Services necessary to test the In-lane Cashless Tolling System and the Cashless Toll Host System and its interface to the PTC host system, the existing CSC/VPC system and SAP.		
	The Contrator shall prepare and conduct tests that validate adherence to the Requirements that guided its Design and development, compliance to Approved Design and Business Rules and demonstrate the Cashless Tolling System functionality.		
954	The Contrator shall be responsible for all aspects of testing performed as part of the Contract and to provide all necessary resources and facilities to conduct all tests including but not limited to:		
	· test support personnel;		
	· varying vehicle types and drivers;		
	· test facilities;		
	· test equipment, tools and safety devices;		
	· test schedule and test sequence;		
	· coordination with existing Contrators;		
	· coordination of lane closures and		
	· conducting the test.		
955	The Contrator shall to the extent possible, develop and use specialized automated testing Software to, including but not limited to:		
	· create test scripts;		
	· control the automated testing;		
	· exercise all conditions, configurations and scenarios;		
	· conduct performance testing;		
	· conduct security testing;		
	· conduct regression testing;		
	· compare actual test outcomes to expected outcomes;		
	· test reporting;		
	· conduct load testing;		
	· conduct user Interface testing;		
	· conduct stress testing;		
	· WAN traffic testing;		
	· conduct sustained operational testing and		
	· conduct sustained burn-in testing.		
956	The Contrator shall provide a defect tracking system, accessible by the Commission, to document and track all defects identified as part of Cashless Tolling System testing and any subsequent actions taken to correct and retest those defects.		
	The defect tracking system shall be capable of the following, including but not limited to:		
	· rating (severity) defects;		
	· categorizing defects;		
	· prioritizing defects;		
	· logging the date/time the defect was reported;		

Functional Requirements			
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957	· subsystems and test cases impacted by the defect; · the user who reported the defect; · the erroneous behavior; · the details on how to reproduce the defect; · the developers who worked on the defect and corrective action taken; · date the defect was corrected and formally re-tested; · life-cycle tracking and · reporting.		
6.1.2	**Testing Sequence and Logistics**		
958	The Contrator shall obtain Approval from the Commission and shall have met the entry conditions prior to start of each test, including but not limited to: · Approval of all predecessor tests; · Approved test procedures for each individual test; · Approved test schedule; · successful closeout of all outstanding pre-test issues; · successful dry run testing with results provided to the Commission; · submittal of the latest Approved version of the RTM showing test validation against the requirements and · confirmation that both site and System are ready for testing.		
959	After the completion of each test, the Contrator shall submit for the Commission's review and Approval a test report that documents the results of the test.		
960	The test report shall address the following, including but not limited to: · the test summary; · the results of the test; · any anomalies and issues identified; · the corrective action/resolution of each item; · the test data; · calculations and backup data supporting compliance to requirements; · comments provided by the Commission and · the results of any re-tests necessary to successfully complete each testing phase		
961	The Commission shall participate in the testing and witness each test. The Commission shall have full access to the test data and results of the test. Test data and results shall be stored on Commission QA/Test Servers.		
962	Testing will not be considered complete by Commission until all anomalies and "punch-list" items are closed-out, and the final test report is Approved by the Commission.		
963	Testing shall occur per requirement #956, subject to Commission's Approval of the final Master Test Plan.		
6.2	**Factory Acceptance Test (FAT)**		
964	The factory acceptance test (FAT) shall be conducted by the Contrator at the Contrator's facility in actual lanes with the complete test Cashless Tolling System in accordance with the Approved MTP described in Section 5.4.8 Master Test Plan (MTP), detailed testing procedures and Project schedule. The FAT test site shall remain available through throughout the term of the Contract for testing and validating changes, fixes and enhancements to the Cashless Tolling Hardware and Software.		
965	The test configuration shall be representative of the Contrator's cashless tolling solutions.		
966	The FAT shall be conducted by the Contrator to verify that all functional elements of the Cashless Tolling System are in conformance with the Contract Requirements.		
967	Upon the successful completion of the FAT exit criteria and Approval of the FAT by the Commission, the Contrator shall be given the authorization to move forward to the On-site First Installation Test.		
968	The FAT shall validate that the Cashless Tolling System Hardware meets the Requirements of the Contract including but not limited to: · 72 hour burn-in testing for customized and assembled Hardware and · certification of Hardware compliance to environmental requirements.		
969	The FAT shall validate that the Cashless Tolling In-lane System meets the Requirements of the Contract including but not limited to: · accurate assignment and proper framing of each vehicle through various traffic conditions and test scenarios; · accurate capture of images and association of transponders and images to the correct vehicles; · compliance to accuracy requirements; · all exception processing requirements; · correct application of Business Rules; · degraded mode scenarios; · all device failure conditions; · rush-hour traffic scenarios;		

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	· redundancy;		
	· mobile enforcement requirements (if option is exercised);		
	· DVAS capabilities;		
	· throughput and load testing using simulated data;		
	· interface to the facility server (if provided) and/or Cashless Toll Host System, and		
	· transaction and image reconciliation.		
970	The FAT shall validate that the Cashless Toll Host System meets the Requirements of the Contract including but not limited to:		
	· user interface;		
	· Dashboards;		
	· Cashless Toll Host functions;		
	· MOMS;		
	· transaction audit;		
	· correct application of Business Rules;		
	· system performance;		
	· reporting;		
	· redundancy;		
	· system loading;		
	· compliance of Cashless Toll Host System interface to Approved ICDs;		
	· OCR/ALPR (if the option to implement OCR/ALPR is exercised), and		
	· importing and reporting of existing detailed and summarized transaction data from the existing PTC Toll Host.		
6.3	**Onsite First Installation Test (OFIT)**		
971	The OFIT shall be conducted by the Contrator at the on-site locations identified by the Commission that are representative of the two gantry concepts; the overhead structures and the toll gantries in accordance with the Approved MTP, detailed testing procedures and Project schedule.		
972	The OFIT shall verify the full functionality of the Contrator's Approved solution and its compliance with the Contract requirements and the Approved Design in a controlled, onsite environment using transactions created during live traffic operations and when lanes are closed to traffic. During OFIT testing the system shall be open to live traffic in a test environment and not collecting tolls.		
973	For OFIT the interface to the Cashless Toll Host System and the image server(s) shall be in the test environment.		
974	The testing shall not interfere with the existing system or impact lane operations.		
975	Before the commencement of the OFIT, all Equipment and Software that are required under the Contract shall be in place, in a production environment and configured for revenue operations. The interfaces to the PTC host system and the existing CSC/VPC system shall be connected to the respective test environments as Approved by the Commission.		
976	In order to test the full functionality of the MOMS and System Monitoring during OFIT, all Equipment shall be entered into the System prior to the start of OFIT and the MOMS shall be configured for cashless tolling operations.		
977	The Contrator shall test the vehicle throughput and speed requirements and generate the required number of transactions to prove the System can process transactions accurately and meet the performance requirements.		
978	Performance requirements shall be verified using Approved sample size.		
979	The OFIT shall validate that the Cashless Tolling In-lane System meets the Requirements of the Contract including but not limited to:		
	· operations of in-lane Equipment and their ability to report failures to the MOMS including the UPS;		
	· multi-lane multi-vehicle traffic conditions such as rush-hour traffic (bumper to bumper), vehicle straddling/changing lanes/merging;		
	· accurate assignment and proper framing of each vehicle;		
	· accurate capture and correct association of transponders and images to the correct vehicle;		
	· transaction processing during equipment failures, and degraded modes of operation;		
	· performance requirements using live traffic and controlled vehicles;		
	· Redundancy as defined in this Scope Of Work;		
	· receive and process TSL, VEL (if exercised) and toll rate schedules (if applicable);		
	· DVAS functionality;		
	· E-ZPass Group interoperability using interoperable test accounts;		
	· lane Business Rules and		
	· interface to the Cashless Toll Host System and the existing CSC/VPC system.		
980	An Audit of the lanes shall be conducted using live (not simulated) in-lane traffic to verify that the Cashless Tolling System is processing vehicles accurately and transactions can be reconciled in the System using the audit tools Approved by the Commission.		
	The OFIT shall validate that the Cashless Toll Host System meets the Requirements of the Contract including but not limited to:		

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981	· functionality of the Cashless Tolling and MOMS Dashboards shall be verified as it applies to transactions, alarm and failure monitoring;		
	· all failure conditions;		
	· user interfaces and toll collection management functions;		
	· Cashless Toll Host Business Rules;		
	· reconciliation of transactions and revenue;		
	· Cashless Toll Host reports;		
	· Ad-hoc reporting capability;		
	· accuracy of performance reports;		
	· interface to the facility server (if applicable);		
	· interface to the PTC host system, SAP and the existing CSC/VPC system including reconciliation;		
	· conformance with performance, load and stress test requirements;		
	· security requirements;		
	· archival and purging requirements;		
	· MOMS asset management; failure notification; work order tracking and performance reporting;		
	· Cashless Toll Host System redundancy requirements, and		
	Cashless Toll Host System data resiliency requirements.		
982	As part of the OFIT, an end to end testing shall be conducted that validates the following functionality, including but not limited to:		
	· System's ability to process and post transactions to the Cashless Toll Host System and on to the existing CSC/VPC system, and		
	· The successful transfer of images from the In-lane Systems to the image server(s) and on to the existing CSC/VPC system;		
6.4	**Installation and Commissioning Test**		
983	The Installation and Commissioning test shall be conducted by the Contrator on each lane as a part of the Contrator's Cashless Tolling System installation in accordance with the Approved MTP, detailed testing procedures and Project schedule.		
984	The Installation and Commissioning test shall validate the functionality and operational status of the lanes including installation and configuration of all Equipment and Software. The lane operations shall be verified end to end upon the completion of the installation checkout prior to opening the cashless tolling lanes for revenue collection.		
985	During the Installation and Commissioning test every piece of in-lane Equipment and its interface to the zone controller shall be verified to be fully operational. The zone controller, its interface to the Cashless Toll Host System and the transmission of images to the existing CSC/VPC system via the image server(s) shall be validated to ensure that the interfaces are in place and the Cashless Tolling System is ready for revenue collection.		
986	A Commissioning test shall be conducted on the Cashless Toll Host System and shall include the image server(s) and the interfaces to the existing CSC/VPC system and the PTC host system.		
6.5	**Cashless Tolling System Operational and Acceptance Test**		
987	The Cashless Tolling System Operational and Acceptance test shall be conducted by the Contrator at each Cashless Tolling plaza location of the Cashless Tolling Project in accordance with the Approved MTP, detailed testing procedures and Project schedule.		
988	The Cashless Tolling System Operational and Acceptance Test shall be conducted for each Cashless Tolling implementation upon authorization by the Commission to commence such testing. The Cashless Tolling System shall be observed in live revenue operations by the Contrator and the Commission for a minimum of four (4) calendar months.		
989	The objective of the Cashless Tolling System Operational and Acceptance Test is to ensure that the Cashless Tolling System Software and Hardware functions over the test period with limited manual intervention in live operations. It is intended to confirm that the Cashless Tolling System and the network are sized and configured correctly and data is processed without interruption.		
990	The Cashless Tolling System Operational and Acceptance Test shall validate the interface of the Cashless Tolling System to the PTC host system and the existing CSC/VPC system and reconcile the transactions and images end to end.		
991	The Cashless Tolling System Operational and Acceptance Test shall validate the operation and accuracy of the Cashless Tolling System common to the Commonwealth of Pennsylvania.		
992	During the test period, System accuracy, performance of the system and operations shall be validated including:		
	· all System accuracy requirements specified in the Contract using representative sample size for each facility under test;		
	· all maintenance performance requirements;		
	· all system performance requirements;		

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	· a two hour vehicle audit during AM and PM peak hours for a total of four (4) hours on each lane at each tolling point that is part of the Cashless Tolling location in test;		
	· transaction processing in accordance with Commission Business Rules;		
	· correct classification of vehicles and assignment of toll and		
	· monitoring of all interfaces for the accurate transfer and processing of all records.		
993	System reliability and auditability shall be verified manually and through tools and reports provided in the System.		
994	Dashboards and reports shall be verified daily for accuracy and reconciled to operations and interface files. Queries and detailed reports shall be generated to validate the daily, weekly, monthly, yearly and comparative reports and compared to reports.		
995	The alarms displayed on the MOMS and all interface status notification shall be verified to be accurate.		
996	Failure of the Cashless Tolling System to meet a performance requirement shall result in the restart of that particular test until such time the accuracy requirements are met.		
997	The Cashless Tolling System Operational and Acceptance Test shall be repeated until the Commission is satisfied that the Cashless Tolling System meets the Contract requirements as set forth in the Contract at each tolling point.		
998	The Cashless Tolling System Operational and Acceptance Test shall be conducted on the baseline tolling points (Findlay/Southern Beltway) upon authorization by the Commission to commence such testing. The Cashless Tolling System shall be observed in live revenue operations by the Contrator and the Commission for a minimum of two (2) monthly audit cycles.		
6.5.1	**Cashless Tolling System Acceptance**		
999	Upon the successful completion of Operational and Acceptance Test for the Cashless Tolling System for each implementation of the Cashless Tolling Project, the closure of all punch-list items and completion and submission of all Contract required documents as set forth in the Contract, the Contrator shall be given the Acceptance for the Cashless Tolling System for each Cashless Tolling implementation.		
VII.	**Maintenance and Software Services**		
	The Contrator shall provide all Maintenance activities associated with the Cashless Tolling System Maintenance and Software Support Services throughout the term of the Contract as further set forth in this Scope of Work. The requirements described in this section detail the Hardware Maintenance and Software and Administrative Support Services for the Cashless Tolling System including any existing Equipment integrated into the Contrator's solution. The tiered Maintenance levels described below and detailed in Attachment 11: Maintenance Responsibility Matrix will become effective upon completion of the Warranty period (Year 1 Maintenance). Cashless Toll Host System Maintenance will be performed and provided by Commission personnel as detailed below.		
	The Contrator shall provide Maintenance and Software Support Services for:		
	1. All Year 1 Maintenance (Warranty Year) Work for the entire Cashless Tolling System;		
	2. All subsequent years Cashless Tolling In-Lane Systems and LAN Maintenance and monitoring and		
	3. All subsequent years Cashless Toll Host System Software, Server and Database Administration defined below.		
	The Commission will provide Maintenance and Support Services for:		
	1. Network Maintenance Services for the Wide Area Network (WAN) and		
	2. Onsite Monitoring for the Cashless Toll Host System, exclusive of those Services defined as Contrator Level 2 Maintenance.		
	Maintenance for the Cashless Tolling In-Lane Systems and Toll Host Systems shall be the responsibility of the Contrator staff, including all the Maintenance Levels described below. For the Cashless Toll Host System, responsibilities by Maintenance Level are dependent on the scope. Onsite monitoring of the Cashless Toll Host System will be performed by Commission personnel 24x7. The Maintenance concept for preventive; pervasive; corrective; security and emergency Maintenance for the Cashless Toll Host System is defined by the levels listed below.		
	Maintenance Level 1: This level of maintenance includes onsite monitoring of system logs and Cashless Toll Host System maintenance alarms; confirmation of file transmissions; confirmation of system backups, and deploying third-party security Software updates that can be handled either solely by Commission technical staff or at the direction of remote Contrator personnel. The responsibility for this level of maintenance will be performed 24X7 and staffing responsibility depending on the physical location of the Cashless Toll Host System as defined below:		

Cashless Toll Host Location	Responsibility
PTC Data Center	Commission
Off-Site or Cloud based	Contractor

Functional Requirements			
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	Maintenance Level 2: This level of maintenance is performed by the Contrator and includes any Cashless Toll Host System activities that can be executed and completed remotely by the Contrator including those maintenance tasks escalated to the Contrator from Commission Level 1 services. Examples include Database maintenance and Software correction that can be performed remotely by the Contrator in coordination with the Commission. This level could potentially involve each of the types of Maintenance, including pervasive and corrective Maintenance. Contrator shall notify the Commission prior to performing any Level 2 Maintenance corrective activities or any activities that are outside of normal monitoring, such as process resets or System reboots. Level 2 Maintenance also includes preventive maintenance and security findings remediation.		
	Maintenance Level 3: This level of Maintenance is performed by the Contrator and includes any Cashless Tolling Host Maintenance Services that require Contrator presence onsite, for example re-configuration of the Cashless Toll Host System.		
7.1	**Cashless Tolling System Warranty Program**		
1000	The Contrator shall be responsible for the implementation and administration of a Warranty Program for all Hardware, Contrator Software and third-party Software provided under this Contract.		
1001	The Contrator shall maintain warranty records and service agreements for all Hardware and third party Software in MOMs, and shall review Software upgrades and available patch reports to keep the Cashless Tolling System current.		
7.1.1	**Hardware/System Warranty Program**		
1002	The Hardware Warranty period for all Equipment furnished under this Contract except server Hardware shall be for a period of one (1) year, commencing on the date of Approved installations of each tolling location.		
1003	In the one (1) year Hardware Warranty period, Warranty Maintenance shall include all Services required to maintain the System Hardware at required performance levels.		
1004	In the Warranty period the Commission shall not be charged for any Services related to Maintenance beyond those associated with force majeure events such as vandalism, relocation of Equipment at the request of the Commission, or damage clearly caused by events outside the control of the Contrator, as set forth in the Contract.		
1005	All Equipment mounting Hardware and brackets provided as a part of this Scope of Work shall be warrantied for the Contract Term.		
1006	The one (1) year Warranty on any additional Approved installed and replaced Hardware and Equipment shall commence when the Hardware and Equipment are installed.		
1007	The Contrator shall take all reasonable and prudent steps to ensure that all Hardware and third party Software used by the System is supported by the third party vendor and all warranties remain in effect.		
7.1.1.1	**Server Hardware Warranty and Support Services**		
1008	All server Hardware shall have a full manufacturer's Warranty and support services for a period of minimum five (5) years beginning with the Acceptance of the Cashless Tolling System for the Cashless Toll Host and for the server Hardware at each tolling point beginning with Acceptance at that tolling point.		
7.1.1.2	**Third Party Software Warranty**		
1009	All third party Software shall have a full manufacturer's Warranty and Upgrade Services, which shall be no less than a period of five (5) years beginning with the Acceptance of the Cashless Tolling System.		
7.1.1.3	**Software Warranty**		
1010	The Cashless Tolling System Software shall have a full Warranty against defects and failures beginning at System Acceptance through the end of the Contract Term subject to the applicable provisions within the Agreement.		
7.2	**General Description of Cashless Tolling System Maintenance and Software Support Services**		
1011	The Contrator shall provide one hundred percent (100) percent of the Cashless Tolling In-Lane Systems and LAN Maintenance Services.		
1012	The Contrator shall provide Level 2 and Level 3 Cashless Toll Host System Hardware, Software, Database and System Administration Maintenance Services including operating system and Software security updates through a coordinated effort with the Commission.		
1013	Hardware Maintenance Services under this Contract shall be for a period as set forth in the Contract from Acceptance of each Cashless Tolling plaza location of the Project. The first year of Hardware Maintenance for each Cashless Tolling plaza location shall be covered under the System Warranty Program as set forth in Section 7.2.1.		
1014	The Contrator shall provide Software Maintenance Services as described in this Scope of Work.		
1015	Software Maintenance and Support Services under this Contract shall be for a period as set forth in the Contract from Acceptance of the Project. A Software Warranty shall be provided for the term of the Contract as set forth in Section 7.2.1.3.		
1016	The Contrator shall be responsible for supporting and maintaining the Cashless Tolling System for any time period in which the System is installed, Commissioned and placed into revenue service but has not passed required testing until such time as the Warranty Period commences. The Maintenance of the Cashless Tolling System provided under this Contract prior to start of Warranty is not included in the term of the Maintenance and Software Support Services.		
1017	The Contrator shall be responsible for supporting and maintaining the Cashless Tolling System at the test plazas until the test plazas are Accepted and Warranty has commenced.		

Functional Requirements			
		Required Proposer Inputs	
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1018	The one (1) year Cashless Tolling System Warranty for each implementation shall commence after the Acceptance of each implementation of the Cashless Tolling Project. The one (1) year Cashless Tolling System Warranty on all other new tolling points deployed by the Contrator shall commence after the Acceptance of the Cashless Tolling System for each subsequent implementations of the Cashless Tolling Project. The one (1) year Cashless Toll Host System Warranty shall commence after the Acceptance of the base Contract implementation of the Project.		
1019	All changes and modifications to the Cashless Tolling System shall be Approved by the Commission and shall follow the Commission Attachment 13 - ETC System Change Control Procedures V1.6.		
1020	The Services and Work performed under the Contract are considered highly confidential and the Contrator personnel shall at all times comply with the Commission security and privacy requirements. Contrator employees shall not discuss their Work with unauthorized personnel or any individuals not directly associated with the Commission.		
7.3	**Cashless Tolling System Maintenance and Software Support Services - Contrator**		
	The Maintenance and Software Support Services shall include monitoring; preventive; pervasive; corrective; security related and emergency Maintenance Services and certain upgrades and enhancements to be performed on all elements of the Cashless Tolling System. Payment for Maintenance and Software Support Services on the Cashless Tolling System for each Cashless Tolling point implemented of the Project shall commence after the expiration of the one-year Cashless Tolling System Warranty Period. The Contrator shall provide the following Cashless Tolling System Maintenance and Software Support Services at the levels defined in Section VII.		
7.3.1	**2.3.1 Cashless Tolling In-lane Systems Hardware Maintenance and Software Support Services**		
	Upon the completion of the Warranty Program at each Approved tolling point, the monitoring and Maintenance functions described below shall be performed by the Contrator.		
1021	During and after the Warranty period the Contrator shall maintain the spare parts inventory in the MOMS and update accurate Equipment inventory status in the MOMS.		
1022	The PTC Operations Group shall monitor the System for failures and alarms, and confirm a MOMS work order has been created for each failure as defined regardless of Maintenance Level.		
1023	The Contrator shall automate the MOMS work order process to the maximum extent possible to anticipate and automate work orders. If a MOMS work order has not been created, the Contrator or the PTC Operations Group shall create a work order in MOMS and assign it to a technician for Maintenance action or troubleshooting.		
1024	The Contrator shall perform the necessary Maintenance and close the MOMS work order upon confirmation that the failure has been successfully corrected. The Contrator shall notify the PTC Operations Group that the repair action is complete and work order has been closed.		
1025	The Contrator shall perform all daily, weekly and scheduled preventive Maintenance on all Cashless Tolling In-lane System Hardware.		
1026	Equipment racks and panels shall be inspected and maintained by the Contrator in full operational, orderly condition, and free of debris and dirt.		
1027	The Contrator shall inspect and maintain all Contrator provided equipment mounting Hardware and brackets provided as a part of its Scope of Work and shall also inform the Commission of any potential problems.		
1028	The Contrator shall inspect and test cables, wiring and terminations to detect problems and degradation. Any item not in compliance with Contract requirements shall be replaced by the Contrator at no cost to the Commission unless such failure is considered non-chargeable as described in Section 2.5.4.2 Non-Chargeable Failures.		
1029	The Contrator shall maintain the Cashless Tolling In-lane System local area network that includes all Contrator network connections in the toll equipment building and interconnections between the toll equipment buildings as defined in Attachment 3b: PTC Communications Network Responsibilities.		
1030	The Contrator shall provide monitoring and troubleshooting as part of Maintenance Services for the Cashless Tolling In-lane System including, but not be limited to:		
	· zone controllers;		
	· AVI system;		
	· AVC system;		
	· LPICPS components and controllers;		
	· OCR/ALPR Software(if the option to implement OCR/ALPR is exercised);		
	· facility servers and Software (if provided);		
	· DVAS cameras;		
	· all cables, wiring, junction boxes, and terminations;		
	· all conduits and cable trays;		
	· all In-lane System electronics and controllers;		
	· Contrator supplied LAN equipment and		
	· all In-lane Contrator and third-party Software.		

Functional Requirements			
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1031	All System administrative functions, if not automated, shall be performed by the Contrator at regular intervals as part of the System preventive Maintenance Services according to the Approved Maintenance Plan to ensure System performance is optimized. All such System administrative functions shall be scheduled as preventive maintenance work orders through MOMS and tracked.		
1032	Continuous monitoring of System operations shall be performed by the Contrator in conjunction with the Commission to verify System is functional; security posture is adequate; processes are being executed as scheduled; files are transmitted as specified, and System is operating to Contract performance requirements.		
1033	Continuous monitoring by the Contrator shall include but not be limited to:		
	· confirming and verifying receipt of all the MOMS messages and Alerts;		
	· verifying the MOMS is receiving and processing System events and reporting the correct status;		
	· evaluating sample transactions data for exception;		
	· confirming data transmission to the Cashless Toll Host System;		
	· confirming image and transaction transmission to the existing CSC/VPC systems;		
	· performing routine diagnostics on all in-lane subsystems;		
	· verifying processes, programs and scheduled jobs are successful;		
	· reviewing comparative reports to identify System degradation;		
	· confirming successful transfer of transponder status list to the lanes;		
	· reviewing OCR/ALPR results (if the option to implement OCR/ALPR is exercised) and poor quality images;		
	· monitoring the DVAS video and event data;		
	· reviewing sample images;		
	· correcting identified performance issues;		
	· evaluating storage requirements;		
	· verify time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold, and		
	· reviewing error logs and Alerts.		
1034	The Contrator shall perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool of the Cashless Toll System and produce ensuing reports at the request of the Commission.		
1035	The Contrator shall monitor for intrusion attempts and prevent all unauthorized access and intrusions at all levels and report such events to the MOMS. Any intrusion, compromise or breach must be reported to Commission IT Security within 12 hours of detection.		
1036	The Contrator shall monitor notifications and initiate corrective actions upon Commission approval on the Cashless Tolling System to meet requirements.		
1037	The Contrator shall perform any Maintenance, daily, weekly, or periodic, required to maintain the System at required performance levels (for example: archival and purging in accordance with the Commission's retention policy).		
1038	The Contrator shall update all Software drivers to meet any new standard Operating Systems as they become available and such updates shall be deployed in accordance with Commission standards.		
1039	The Contrator shall retrieve data manually from the zone controllers and download transponder status list and toll rate and schedule files in the event there is an extended communications failure.		
1040	The Contrator shall re-establish or re-install System files, programs and parameters, as required, following a failure or damage to the System and return lanes to fully operational condition.		
1041	In the event of a declared disaster the Contrator shall perform procedures as needed and return lanes to fully operational condition.		
1042	The Contrator shall perform OCR/ALPR updates as required in accordance with the Commission ECO procedures within an Approved Commission time frame to support license plate changes if the option to implement OCR/ALPR is exercised.		
1043	As part of the Software Support Services the Contrator shall develop and test Software as required to accommodate corrective action, changes to Business Rules or lane configurations in accordance with the Commission ECO procedures. Scope shall include provision of evidence packages and release notes detailing changes for Commission review and Approval, installation of new Software and confirmation of successful installation.		
1044	The Contrator shall analyze daily and weekly trends to identify problems, including but not limited to:		
	· high number of transactions without transponder;		
	· high number of Class Mismatch transactions;		
	· abnormal changes in traffic counts and class;		
	· high number of exceptions or unusual occurrences;		
	· high number of inValid Transponder transactions;		
	· abnormal changes in transponder counts and status changes and		
	· high number of rejected images.		
7.3.2	**Cashless Toll Host System Server and Database Administration, Maintenance and Software Support Services**		

Functional Requirements			
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	The requirements in this section describe the services to be provided by the Contrator under the Maintenance and Software Support Service for the Cashless Tolling System.		
1045	The Contrator shall provide Maintenance and Software Support Service for all elements of the Cashless Toll Host System when located at a Commission Approved offsite location or Cloud environment in all environments required in the Contract including but not limited to:		
	· Cashless Toll Host System Hardware;		
	· operating systems;		
	· databases;		
	· application Software;		
	· third-party Software patches;		
	· security updates;		
	· Software configuration and		
	· Software version control.		
NA	The Commission may provide Maintenance and Software Support Service for elements of the Cashless Toll Host System when located at the PTC Data Centers including but not limited to:		
	· operating systems;		
	· third-party Software patches and		
	· security updates;		
1046	The Contrator shall provide continuous 24x7 system administration services coverage on the Cashless Toll Host System, if off-site or Cloud location, to ensure that it is performing and will continue to perform at a satisfactory level.		
1047	The Contrator support staff shall be available on-call 24x7 to investigate and perform maintenance for those failures escalated to the Contrator.		
1048	System administration services shall include monitoring and corrective action to ensure System performance is in accordance with requirements of this Scope of Work. This shall include but is not limited to:		
	· monitoring Cashless Toll Host System Hardware at the primary and secondary locations including servers; storage devices and backup systems;		
	· verifying processes, programs, and scheduled jobs are successful;		
	· confirming all transactions and images are successfully transmitted to the receiving Systems;		
	· confirming all messages described in the ICD are being successfully exchanged between the Cashless Tolling Systems, existing CSC/VPC systems, SAP and PTC Toll Host system;		
	· confirming applications are functional and available to Authorized Users;		
	· confirming all scheduled reports are successfully generated and available to Authorized Users;		
	· verifying all processes are functioning and data and images are moving successfully though the queues;		
	· verifying all third-party interface are functioning and successfully exchanging files;		
	· scheduling of preventive, corrective and predictive Maintenance activities;		
	· performing any daily, weekly, or periodic Maintenance required to maintain the System at required performance levels (for example: indexing and tuning databases; archiving and purging in accordance with the Commission's retention policy);		
	· maintaining and updating records of all Maintenance events and activities in the MOMS;		
	· performing third-party Software or firmware upgrades in conjunction with the Commission, as required and to be compliant to security requirements including but not limited to performing security Software upgrades, database upgrades and operating system upgrades at offsite or Cloud locations;		
	· support upgrades performed by the Commission for third-party Software or firmware as required to be compliant to security requirements including but not limited to performing security Software upgrades and operating system upgrades at PTC Data Centers;		
	· contact with the Commission, operations and Contrators regarding System issues, performance, security posture, Software Release and Maintenance scheduling;		
	· performing Approved manual actions, adjustments and updates to the System data based on predefined criteria to correct issues and as Authorized by the Commission;		
	· re-establishment or re-installation of System files, programs and parameters, as required, following a failure or damage to the System;		
	· monitoring of error logs and System logs;		
	· restoration testing of backups (Software and data) to be performed yearly in coordination with the Commission with the results reported back to the Commission.		
	· Maintenance of up-to-date Software backups (all System Software and data);		
	· installation of new Software and confirmation of successful installation;		
	· verifying time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold;		

Functional Requirements			
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	· assisting Commission administrative staff as requested by the Commission;		
	· troubleshooting Cashless Tolling System issues;		
	· creation of Ad-hoc reports requested by the Commission;		
	· generation of queries as requested by the Commission, and		
	· analysis of data as requested by the Commission.		
1049	Software support services shall include monitoring and corrective action to ensure System performance is in accordance with requirements of this Scope of Work, to include database management and operation. This shall include, but is not limited to:		
	· investigation and analysis of errors and exceptions and taking corrective action including correcting the problem and reprocessing the data;		
	· monitoring of notifications, and initiating corrective actions on application programs to meet requirements;		
	· updates to the Cashless Tolling System and application to support upgrades to Hardware or third-party Software;		
	· updates to the Cashless Tolling System and application to support all changes to Business Rules and Cashless Tolling System configurable parameters, and deploy changes in production according to Commission Approved deployment schedule;		
	· updates to the Cashless Tolling System and application to support changes to E-ZPass Group ICD including the addition of new E-ZPass Group Agencies;		
	· updates to the Cashless Tolling System and application to support the addition of new Interoperable Agencies;		
	· updates to the Cashless Tolling System and application to support changes to continue its compliance to updated security requirements, and		
	· updates to the Cashless Tolling System and application to support legislative and statutory changes.		
1050	As part of the Software Support Services the Contrator shall develop and test Software as required to accommodate corrective action, changes to Business Rules or lane configurations in accordance with the Commission ECO procedures. Scope shall include provision of evidence packages and release notes detailing changes for Commission review and Approval, installation of new Software and confirmation of successful installation.		
7.4	**Cashless Tolling Network Maintenance Support Services – Commission Responsibility**		
	Commission technical staff will provide Maintenance Support Services for the Commission Toll System WAN Network as specified in this section. In addition Commission technical staff will provide 24x7 monitoring services for the Cashless Toll Host System if it is located at the PTC Data Center. If the Cashless Toll Host System is located at a remote location or privately hosted Cloud site, it will be the responsibility of the Contrator to provide 24x7 monitoring services for the Cashless Toll Host as in detailed in Attachment 11: Maintenance Responsibility Matrix.		
	Commission technical staff will maintain and monitor the WAN system that includes:		
	· connection of the PTC Primary Data Center to the network equipment at the toll equipment building at each tolling point location;		
	· connection of the PTC Primary Data Center to the CSC/VPC primary and disaster recovery locations;		
	· connection to the existing PTC Toll Host locations and		
	· operating system and Software patching levels for the Commission provided network equipment security postures.		
	The Commission will upgrade and update the network security to ensure the Commission network is always in compliance with updated security standards.		
	If the Cashless Toll Host is located at the PTC Data Center, the Commission will have additional responsibility for Operating systems and Database updates, security updates and 3rd party patches.		
1051	The Contrator shall provide Commission Approved diagnostic aids, tools and Equipment to perform monitoring services, as necessary to assist Commission technical staff monitor the Cashless Toll Host System.		
7.5	**Updates to Maintenance Plan and Other Maintenance Related Documentation**		
1052	The Contrator shall update the Maintenance Plan and other Maintenance documentation to reflect any changes to the policies or procedures developed by the Contrator and Approved by the Commission, for the Cashless Tolling System Maintenance services. The Maintenance Plan shall be updated and uploaded to the online System documentation library every year for review and Approval. However, sections of the Maintenance Plan or its Appendices shall be submitted for review and Approval as the changes are identified. A version update sheet shall be included with the Maintenance Plan, and the Maintenance Plan on file shall have the most recent version from the configuration management database.		
7.6	**Maintenance Requirements**		
7.6.1	**Preventive Maintenance**		
1053	The Contrator shall provide and perform onsite Preventive Maintenance on the Cashless Tolling In-lane System Hardware, Cashless Toll Host System Hardware, Contrator LAN communications equipment and Software in accordance with the Approved Preventive Maintenance plan.		

Functional Requirements			
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1054	The Contrator shall inspect all Contrator installed Equipment, both major components and support components (fans, equipment racks, storage units) that constitute the Cashless Tolling System and shall make such repairs; cleaning; adjustments, and replacements of components as necessary to maintain the Equipment in normal operating condition in accordance with the Approved Preventive Maintenance plan.		
1055	In addition to required ongoing Contrator monitoring the servers and data processing units shall be actively monitored by the Contrator to verify that storage space is not reaching limits, disks are not fragmented or damaged, Software being used is of latest version per the configuration management and data is being processed and transferred in an appropriate manner.		
1056	Transaction and image processing volumes and times shall be monitored at the lane by the Contrator and Systems optimized for performance with Commission Approval.		
1057	Report generation times, System access times, and System response time shall be monitored by the Contrator to ensure performance meets the Contractual requirements.		
1058	The Contrator shall include all Equipment and Systems as part of the Preventive Maintenance in accordance with the original Equipment manufacturer's guidelines. Any variations or exceptions shall be noted by the Contrator and Approved in advance by the Commission.		
1059	Preventive Maintenance shall be performed by the Contrator during the normal working hours when Maintenance technicians are scheduled to be onsite. Diagnostic aids, tools and Equipment Approved by the Commission to perform Preventive Maintenance equipment analysis shall be provided by the Contrator, as necessary.		
1060	Preventive Maintenance requiring lane closure shall be scheduled by the Contrator for off-peak travel periods; evenings; Saturdays, and Sundays and coordinated with the Commission, so that the Work shall not interfere with normal traffic flow, unless otherwise Approved by the Commission.		
1061	The Contrator shall provide a Preventive Maintenance schedule, to be Approved by the Commission, as part of the Maintenance Plan. The schedule shall detail the preventive Maintenance to be performed on each Equipment item and system. The schedule shall provide a description of the Work to be performed, expected duration and the frequency.		
1062	The preventive Maintenance schedule shall be entered by the Contrator into the MOMS and work orders shall be automatically created to alert Contrator staff of required preventive Maintenance. Failure of the Contrator to perform required preventive Maintenance in accordance with the Approved schedule shall result in liquidated damages, as specified below in the Maintenance Performance Requirements Section 7.22.		
7.6.2	**Predictive Maintenance**		
1063	The Contrator shall establish a Predictive Maintenance program by which failure analysis can be determined by identifying potential failures through the MOMS records. The failure analysis shall take into account either or both specific components and sub-systems. This information shall then be used to investigate and correct problems and failures that could disrupt toll collection operations.		
1064	The Contrator shall maintain all failure analysis documentation on site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.		
7.6.3	**Pervasive Maintenance**		
1065	The Contrator shall establish a Pervasive Maintenance program by which failure analysis can be determined by identifying continuing or repetitive failures through the MOMS records. The failure analysis shall take into account either or both specific components and sub-systems. This information shall then be used to investigate and correct problems and failures that continue to occur on a particular item of equipment, sub-system, or component.		
1066	The Contrator shall maintain all failure analysis documentation on site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.		
7.6.4	**Corrective Maintenance**		
1067	All Work performed by the Contrator to correct problems to meet the requirements of the Contract or Software defects shall be considered as Corrective Maintenance and shall be corrected based on priority level within the time specified within this scope of work under Maintenance Coverage and Response Times. Such problems include but are not limited to:		
	· failure of System functions;		
	· failure of processes and programs;		
	· report issues;		
	· application failures;		
	· toll system network issues;		
	· inadequate security posture;		
	· degraded System or component performance, and		
	· non-conforming availability or MTBF.		
1068	Corrective action that require modification to the Software shall be reviewed by the Commission and corrections deployed in accordance with Approved release notes and Commission schedule.		
1069	The Commission shall be notified before any corrective Maintenance is performed.		

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1070	Notwithstanding the foregoing, for repeated failure of Equipment, components, or Systems, the Contrator shall undertake an investigation as outlined in Section 7.7.3. If the problem is determined by the Commission to be a pervasive defect, the Contrator shall be responsible for the replacement and repair of the problem Equipment, component, or System at no additional charge to the Commission.		
7.6.5	**Onsite Corrective Maintenance for Cashless Toll Host System**		
1071	Upon the confirmation that a failure/work order qualifies as Level 3 Onsite Corrective Maintenance, the Contrator shall submit a request to the Commission for Approval to perform the Level 3 Corrective Maintenance in accordance with the of the Commission ECO process.		
1072	The Contrator shall submit a schedule for performing the Onsite Corrective Maintenance and coordinate all travel with the Commission.		
1073	Upon Authorization to perform the Onsite Corrective Maintenance, the Contrator shall initiate the Work. An authorized Commission representative shall be notified when the Contrator personnel is onsite at the Cashless Toll Host facility performing the corrective action.		
1074	The details of the Work shall be recorded in MOMS by the Contrator and upon verification of the corrective action by the Commission, the Contrator Work on this corrective action item shall be considered complete.		
7.6.6	**Upgrades and Enhancements**		
1075	Upgrades and enhancements required for reasons such as to meet changes to standards, statutes or interoperability Equipment changes or the addition of new functionality; or, that provide the Commission with a demonstrable benefit in performance, costs or productivity, shall be proposed with costs and schedule by the Contrator in accordance with the requirements of the Commission ECO process, as set forth in the Contract.		
1076	Software modifications that are required to maintain and support the System as a part of the normal course of business such as version changes, configuration or parameter changes or minor changes to Software or code such as changes to the existing ICDs; or Software modifications required to ensure System is compliant to specified standard (for example security) or, changes that improve the Contrator's ability to maintain and support the System, shall not be considered upgrades or enhancements and shall be provided by the Contrator at no cost to the Commission. All such Software modifications shall be in accordance with the of the Commission ECO process.		
7.7	**Maintenance Coverage and Response Times**		
1077	The Contrator shall post a weekly schedule identifying personnel and times for onsite and on-call Maintenance. Commission Approval is required for any change in Contrator staff. The Contrator shall provide to the Commission the updated active personnel list and contact information when there is a change in personnel.		
1078	Response to calls and repair times shall be determined by priority as described below. Contrator failure to meet the response and repair time criteria described below (requirement #1086) shall result in liquidated damages as specified in Section 7.22.		
1079	Regardless of Level 2 or Level 3 service, onsite or on-call, acknowledgement of receipt of notification of a Maintenance issue or human acknowledgment of a failure shall not exceed thirty (30) minutes after the failure notification was recorded or problem was reported.		
1080	Priority of failures shall be defined during the Design phase. Time to respond and complete repair are determined by priority and is defined as follows:		
	· Priority 1: Defined as any malfunction or fault or Software defect that results in the immediate loss of revenue; security breach; closure of lanes outside of the Commission lane closure requirements; hazard to personnel or driving public; loss of audit data; loss of redundancy in any redundant System components; loss of functionality that impacts E-ZPass Group Agencies or failure that negatively impacts Lane or Cashless Toll Host System operations.		
	o For In-lane Systems Maintenance this priority shall have a two (2) hour time to respond and complete repair.		
	o For Level 2 Maintenance this priority shall have a two (2) hour time to respond and complete repair.		
	o For Level 3 Maintenance this priority shall have two (2) hour time to complete repair once Approval to commence Work is provided by the Commission and Maintenance personnel is onsite and ready to perform the repair. The Contrator shall make every effort to be onsite within twenty-four (24) hours of Approval to commence Work.		
	· Priority 2: Defined as any malfunction or fault that degrades the System performance but not the operational ability of the System. It includes, but is not limited to inaccurate reporting, inability to reconcile revenue or loss of System functionality that impacts access to data.		
	o For In-lane Systems Maintenance this priority shall have a four (4) hour time to respond and complete repair.		
	o For Level 2 Maintenance this priority shall have a four (4) hour time to respond and complete repair.		
	o For Level 3 Maintenance this priority shall have two (2) hour time to complete repair once Approval to commence Work is provided by the Commission and Maintenance personnel is onsite and ready to perform the repair. The Contrator shall make every effort to be onsite within forty-eight (48) hours of Approval to commence Work.		
	· Priority 3: Defined as any action or event that has the potential to result in a malfunction or degrading of the System performance but has not impacted performance and is not anticipated to immediately impact performance.		
	o For In-lane Systems Maintenance this priority shall have a twenty four (24) hour time to respond and complete repair.		

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	o For Level 2 Maintenance this priority shall have a twenty-four (24) hour time to respond and complete repair.		
	o For Level 3 Maintenance the Contrator and the Commission shall agree on the time period for onsite correction but time to respond and complete repair shall be no longer than three (3) calendar days of Approval to commence Work.		
1081	For Priority 1 and priority 2 failures the Contrator shall provide dedicated resources until the issue has been resolved to the Commission's satisfaction.		
1082	Outages and tasks performed under the Preventive Maintenance period shall be defined as Priority 4. The System shall be available and fully operational within the Approved time schedule for such activities and upon completion of the Preventive Maintenance period. Any failures generated or resulting from Preventive Maintenance activities shall be accounted for as Priorities 1, 2 or 3 and be addressed in accordance with these requirements.		
1083	Response and Repair time is defined as the combined time from when failure occurred or problem was reported to when the repair or correction of the failure occurred; the period of time beginning when the failure occurred (failure time) and ending when the fault condition is corrected and returned to normal operations.		
1084	Response and repair times for every Maintenance event shall be recorded in the MOMS and reported and such reports shall be provided to the Commission in accordance with the reporting requirements of this Scope of Work.		
7.8	**Notifications**		
1085	The entry of a problem (either by the System or an Authorized User) into the MOMS shall constitute the start of the acknowledgment time for purposes of measuring the Contrator's acknowledgment time and response/repair time.		
1086	For purposes of measurement of performance and for the development of Maintenance policy and procedures, notification of System malfunctions, problems and discrepancies may be provided to the Contrator in three (3) different methods, summarized below.		
	· Verbal Notification: Defined as an in-person notification or telephone call. In all cases, the first conversation with, or notification of the Contrator shall signify the start of the response time for purposes of measuring the Contrator's response time. All verbal notifications shall be recorded in MOMS by the Contrator.		
	· Written Notification: Defined as a written description of a problem or condition, typically provided by the Commission or its representative. Written notification could be faxed, texted, or emailed to the Contrator by a customer or user. The time of receipt of fax, message or email shall signify the start of the response time for purposes of measuring the Contrator's response time. All written notifications shall be recorded in MOMS by the Contrator.		
	· MOMS Notification: Defined as an automatic notification through the MOMS identifying a problem within the Cashless Tolling System that is the Maintenance responsibility of the Contrator and sending out an automatic Alert message by email or text to a Contrator's Maintenance staff to respond to the failure. In addition to the Contrator notification, the Alert shall be posted on the MOMS and available via reports. The presence of a MOMS notification in the System shall constitute the start of the response time for purposes of measuring the Contrator's response time.		
7.9	**Recording of Maintenance Activities**		
1087	The Contrator and the Commission shall utilize the MOMS for initiating the work orders. MOMS shall be utilized for recording and tracking all Maintenance and Software Support Services performed on the Cashless Tolling System. All Equipment provided under this Contract shall be tracked through MOMS from the purchase to their disposal.		
1088	In all cases, it shall be the Contrator's responsibility to log all reported Maintenance activities into the MOMS. The Contrator shall also be responsible for documenting all information and issues related to a failure condition, including all actions taken to complete the correction into the MOMS.		
1089	The work order shall contain as much information as possible in order for persons other than the technician or his supervisor to reasonably determine the fault, when it was worked on, the corrective action and any other information pertaining to the individual Maintenance event, including replacement of parts.		
1090	All performance metrics shall be recorded and tracked through the MOMS and compliance to performance requirements shall be validated using MOMS reports.		
1091	It is the Contrator's responsibility to ensure that its Maintenance staff has real time access to the MOMS and that all the required connections are established and ongoing to ensure that the Maintenance staff has remote access. Maintenance staff shall be trained in the use of the MOMS.		
7.1	**Spare Parts**		
1092	Contrator shall be responsible for the inventory of all spare parts at an Approved storage facility(ies) and shall be insured in this regard as set forth in the Contract. The Contrator shall account for all spare parts and shall provide safeguards against theft, damage, or loss of the spare parts.		
1093	The Contrator shall ensure that only spare parts and equipment required to service the Cashless Tolling System and LAN communications spare equipment are stored at this facility and shall only be used for the PTC Cashless Tolling System.		
7.10.1	**Spare Parts Inventory Management**		
1094	The Contrator shall be responsible for the Maintenance of an adequate spare parts inventory. The Contrator is responsible for monitoring and identifying the existing spare parts inventory, ordering spare parts as required, and proposing the quantity needed to maintain the required performance.		

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1095	The Contrator shall update and recommend a spare part quantity to be maintained in order to support the Cashless Tolling System functionality and operational readiness.		
1096	The Contrator shall hold the Commission harmless in the event spare parts or consumables are not available as a consequence of the Contrator's failure to purchase or replenish the spare parts or consumables Approved by the Commission.		
1097	During the term of this Agreement (including after the expiration of any applicable warranty periods) the Contrator shall be responsible for purchasing all miscellaneous repair items and consumable materials necessary to maintain the Cashless Tolling System at the performance levels specified in the Contract.		
7.10.2	**Spare Part Inventory and Tracking**		
1098	The Contrator shall be responsible for recording the inventory into the MOMS, monitoring the inventory quantity and ensuring that the inventory is maintained to the levels required.		
1099	The Contrator shall keep accurate records of all parts entering and leaving inventory including but not limited to: time and date part was dispensed, and the location within the Cashless Tolling System where the part was dispatched and used.		
1100	The Contrator shall also be responsible for tracking of all warranty replacement for Contrator provided Equipment through returned materials authorization (RMA) process. If the replaced part is under warranty, the part shall be immediately replaced with a new part. If the replaced part is out of warranty, the Contrator shall make every effort to repair the replaced item to a usable status and place the part back into spares inventory.		
1101	If the Contrator is unable to repair the part, a new part shall be purchased and placed into spares inventory. The details of the repair efforts, including problem; status; inventory, and repair disposition shall be included in the MOMS inventory and repair database.		
7.10.3	**Procurement and Control of Spare Parts**		
1102	Thirty (30) days prior to placing the Cashless Tolling System in revenue collection the Contrator shall have purchased and have on hand at Commission facilities the agreed upon inventory of spare parts.		
1103	The spare parts shall be purchased on behalf of the Commission and shall be invoiced at the time of installation and owned by the Commission in a manner to ensure that the Commission receives the maximum benefit from any warranties associated with the spare parts. After the warranty period, the Commission shall reserve the right to purchase all spare parts directly from the source and all purchases will be coordinated through the Commission Procurement Office. After the Warranty period, Contrator provided spare parts not purchased directly by the Commission shall be provided at cost, shall not include any mark up and shall be in accordance with the agreed to Contract price. The Commission shall be under no obligation to buy back excess spare parts purchased by the Contrator.		
1104	The Contrator shall cooperate with and assist the Commission to ensure that all spare parts, equipment, and other Commission owned property is stored or otherwise located on the Contrator's property or in Contrator controlled space shall not be subject to any risk of being confiscated, claimed, attached, withheld by a landlord, creditor, or similar risk.		
1105	This cooperation includes, but is not be limited to, affixing appropriate labeling to track within MOMS and identify as the property of the Commission, with a Commission specific part or control number. All spare parts and consumables shall be maintained by the Contrator free and clear of any liens and encumbrances of any kind. The Commission shall have the right to inspect the spares and consumables inventory upon request.		
1106	The facility and storage area shall be secured and connected to an up-to-date security network system with alarm notification provided to the Contrator's Maintenance staff. Further, it is required that the Commission shall have full and unrestricted access to the Maintenance and or storage facility.		
1107	Any spare parts that are lost or damaged due to the negligence, intentional act, or omission of the Contrator or its employees, SubContrators, agents, or invitees shall be replaced by the Contrator at its sole cost. The Commission may elect to assume responsibility at any time for storage of spare parts, and the Contrator shall deliver all spare parts to the Commission for storage after receipt of reasonable notice from the Commission.		
7.11	**Repair Depot**		
1108	The Contrator shall be responsible for providing and staffing a repair depot for the return and repair of Cashless Tolling System components.		
1109	The Contrator shall be responsible for repairing failed Cashless Tolling System components and returning them to the spare parts inventory.		
1110	Failed components shall be tracked by the Contrator utilizing MOMS, including final resolution. Component tracking shall include but not limited to the following: receipt, repair date/information, replace reason, date of return.		
1111	The Contrator shall indicate the details of the repairs performed on any components. This shall include but not be limited to boards and connectors replaced.		

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1112	If the replaced part is under Warranty, the part shall be immediately replaced with a new part by the Contrator. If the replaced part is out of Warranty, the Contrator shall make every effort to repair the replaced item to a usable status and place the part back into spares inventory. Except for pervasive defects, for out of Warranty components, the Contrator shall document why the component could not be repaired and advise the Commission that a new spare must be ordered.		
7.12	**Audits**		
1113	The Contrator shall completely support the Commission in any audit activity relating to the PTC's Cashless Tolling System or operations. In addition, the Contrator shall conduct audits in accordance with the Contrator's Quality Assurance Program. All deficiencies identified through the Audit process shall be successfully corrected by the Contrator. These audits may include, but are not limited to the following:		
	· internal control procedures;		
	· revenue/transaction reporting;		
	· financial audit and		
	· System processing and performance.		
	· Third party security evaluations		
7.13	**Security Certification**		
1114	The Contrator in coordination with the Commission shall perform monthly security tests that are scheduled in the MOMS, as well as every time a new Software release is deployed or new network equipment is added or replaced to evaluate the security risk to the Cashless Tolling System and identifying potential vulnerabilities. Commission IT Security shall be a party to these security tests and shall be notified in advance of any scheduled tests.		
1115	The Contrator is responsible for correcting all Cashless Tolling System security deficiencies at the Contrator's cost and ensuring there are no security risks.		
7.14	**Cooperation with Other Vendors and Providers**		
1116	The Contrator shall cooperate to the fullest extent with other Contrators and third-party vendors in order to ensure that the lane and Cashless Tolling System operation and Maintenance do not conflict with or cause any deterrent in capability or service to the traveling public, customers, or the Commission.		
7.15	**Emergency Response Management**		
	The Commission has an emergency response management plan and the Contrator shall follow the procedures set forth in this plan when an emergency situation is invoked.		
1117	The Contrator shall immediately respond to any emergency situation, as notified by the Commission or otherwise, that may arise that has already or could potentially damage the Cashless Tolling System. The Contrator shall be prepared to put forth all necessary resources to divert or correct an emergency condition.		
1118	Such emergency conditions shall be handled in accordance with the policies and procedures established by the Commission. The following are a few examples of emergency conditions:		
	· weather related;		
	· vehicle accident;		
	· conditions that invoke the Disaster Recovery Plan;		
	· third party (power outage or communication failure);		
	· vandalism that causes parts of the Cashless Tolling System to be inoperable and		
	· detection of security breaches, discovered vulnerabilities and activities that pose a security threat to the Commission's toll collection system;		
7.16	**Cashless Toll Host Disaster Recovery**		
1119	The Contrator shall perform Disaster Recovery procedures in accordance with the Approved Disaster Recovery Plan (DRP) in the event of a disaster and return the Cashless Toll Host System to a fully operational condition.		
1120	The Contrator shall test the Disaster Recovery procedures on a yearly basis to validate that they are functioning per the Design. The Commission shall witness the test and the Contrator shall provide a report outlining the test, test results and any anomalies encountered for the Commission's review and Approval.		
1121	The Contrator shall address any issues encountered from the yearly Disaster Recovery testing.		
7.17	**Incident and Revenue Loss Reporting**		
1122	The Contrator shall immediately notify the Commission of any incident or event whereby the potential or actual loss of revenue occurred or could potentially occur. The Contrator shall take immediate action to rectify the condition and return the Cashless Tolling System to normal functioning.		
1123	A Monthly Incident Report shall be provided by the Contrator that includes a breakdown of lost electronic data and revenue by the Commission for each incident. If the condition is determined to be due to the fault of the Contrator, damages shall be assessed in accordance with the terms of the Contract.		
7.18	**Maintenance Staffing, Materials and Training**		
7.18.1	**Maintenance Staffing Requirements**		

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1124	The Contrator shall be responsible for maintaining an adequate level of technical staff to perform Maintenance and Software Support Services on the Cashless Tolling System. The Contrator shall ensure that sufficient staffing is available to cover all Maintenance activities identified in this Scope of Work at all times but particularly during the following periods:		
	· Weekends;		
	· Holidays;		
	· personnel on vacation/sick time;		
	· after regular scheduled Work hours (on call), and		
	· unexpected emergency or crisis.		
1125	The Contrator shall provide personnel to perform the following functions. It shall be the Contrator's responsibility to staff at appropriate levels to meet the requirements, using the Maintenance Plan as the guideline for staffing levels and full job descriptions:		
	· Management: Contrator's Maintenance Management responsibilities include all Maintenance Management business dealings with the Contrator's Project Manager. Responsibilities include single point of contact for all Work related issues, including System problems, material issues, or Contrator personnel issues. Maintenance Management responsibilities also include ensuring that Systems are properly functioning and that the Maintenance and repair Work are properly performed and documented.		
	· Field Supervision: The Field Supervisory functions include being responsible for the day to day operations of the technicians, ensuring that all required Work is accomplished properly and efficiently.		
	· Maintenance Technical Staff: Responsibilities include responding to Maintenance activities and Alerts and for field level preventive Maintenance. Maintenance technicians shall be qualified and maintain the proper certifications to troubleshoot Maintenance problems and identify the source of the problem.		
	· Network Engineering: Network Administration shall include the configuration and Maintenance of the network systems and communications network.		
	· Database Administration: Database administration shall include management of the servers and databases in accordance with Attachment 12 - Database Standards for the Pennsylvania Turnpike Commission. The database administration shall cover all aspects of the System database and ensuring the database is optimized for peak performance. The responsibilities include the configuration and operation of the System database and generation of database queries as requested by the Commission and other support personnel.		
	· Systems Engineering: Responsibilities include the configuration and monitoring of all System processing and verify that all operations and processes are occurring as scheduled. All MOMS alarms relating to process failures shall be investigated and resolved by the System engineering staff. Systems engineering responsibilities also include ensuring the proper configuration of all servers and coordinating all server Maintenance. System engineering responsibilities also include identifying issues, communicating with the System Software personnel and coordinating resolution of the problem. All user-related problems (application Software) shall also be handled by the System engineering personnel.		
	· Software Technical Staff: Responsibilities include responding to Maintenance activities and Alerts and resolution of Software problems. Software technical staff shall be qualified to troubleshoot Maintenance problems, identify the source of the problem and correct the problem.		
	· Administrative Staff: Responsibilities include support of the Contrator's Maintenance organization for the performance of Maintenance functions and to provide adequate phone and administrative support at the Maintenance management facility.		
	· ECO Management: Responsibilities include managing the ECO process between the Contrator and the Commission. ECO management staff will ensure all the proper forms are filled out and proper authorizations are obtained to perform the change order work.		
	· Documentation Staff: Responsibilities include updating and maintaining the documentation library to ensure all Cashless Tolling project documentation required in this Scope of Work is current and up to date.		
7.18.2	**Tools and Materials**		
1126	The Contrator shall provide all test Equipment and tools and support; including but not limited monitoring tools; smart phones; laptops, and any other items required for the Maintenance and Software Support staff to perform their Maintenance activities. All such devices shall have adequate and up-to-date security Software and be Approved by Commission IT before they are used on the Cashless Tolling System network. All required test Equipment, tools and Software tools shall be on site (as required) and in adequate supply, with all required personnel trained on their use. All test Equipment shall be standard units that are capable of achieving the measurement they are intended to make.		
7.18.3	**Training Program**		
1127	The Contrator shall ensure that Maintenance and Software services staff is properly trained for requirements of maintaining the System. The Contrator shall provide a minimum of two (2) weeks of classroom and On the Job Training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned Maintenance duties.		

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1128	The Contrator shall provide trained qualified technical staff to support the Maintenance and Software Support Services described in the Scope of Work. It is the Contrator's sole responsibility to develop training necessary to successfully perform all of the Maintenance actions required to keep the System operational.		
1129	The Contrator shall complete all required training and certifications prior to performing actual Maintenance and Software Support Services within a revenue collection environment. In the event changes or modifications are made to the System Equipment or configuration, supplemental training shall be accomplished prior to the actual service date for the changes or modifications.		
1130	Training shall include the Contrator's safety standards and guidelines and applicable Commission policies and procedures.		
1131	The Contrator shall provide documentation that this initial training has been successfully completed.		
1132	Various training programs the Contrator shall institute shall include, but not be limited to, the following:		
	· a thorough understanding and operating knowledge of the MOMS is required of all Maintenance personnel;		
	· an in depth understanding of the Cashless Tolling System and operations, including all Equipment, Software, interfaces, file transfers and interconnections;		
	· use of Maintenance documentation such as Maintenance manuals; drawings; vendor manuals, and parts list;		
	· functions of the System monitoring tools used to manage the System monitoring tasks;		
	· preventive Maintenance of all Systems and sub-systems;		
	· troubleshooting; diagnostics; repair, testing, and Maintenance follow up;		
	· System logs, errors logs and processing of exceptions;		
	· System dataflow and workflow queues;		
	· review of the Dashboard data and analysis;		
	· discussion on the areas of responsibility;		
	· special use Maintenance and monitoring tools;		
	· queries and reports, and		
	· System access and security.		
1133	All System Maintenance and Software support personnel shall attend the appropriate training sessions. The Commission staff shall be notified of and invited to attend any or all training sessions two (2) weeks in advance of the training.		
1134	All System Maintenance and Software support personnel shall be trained on scheduling, work assignments, escalation process, transportation requirements and communications;		
1135	The Contrator shall provide training offered by vendors and original equipment manufacturer (OEM) for System components where available and required to properly operate, maintain, test and repair such Equipment and Software. Such training shall include but not be limited to:		
	· LPICPS Equipment;		
	· AVI Equipment;		
	· AVC System;		
	· DVAS;		
	· MOMS;		
	· network components and Software provided by the Contrator;		
	· security Software and security tests;		
	· databases and		
	· servers.		
7.18.4	**Training Materials and Ongoing Education**		
1136	Training material shall consist of Maintenance manuals, vendor manuals and any other documentation that provides for the efficient and effective Maintenance of the System and its components.		
1137	The Contrator shall hold regular meetings with Commission technical personnel to update Maintenance procedures, bring proposed System changes to the attention of the technical staff and discuss Maintenance issues identified in the field. The Contrator shall provide the Commission with the meeting schedule so that the appropriate Commission staff can attend these meetings.		
1138	The Commission shall have the right to make recordings and copies of all training program materials. The Contrator shall provide releases from all employees/Contrators to allow unlimited, royalty free use and copies of recordings.		
7.18.5	**System Documentation**		
1139	The Contrator shall have appropriate System documentation available to all Maintenance and Software Support personnel as required to perform their respective duties.		
1140	The Contrator shall make immediate updates to the online System documentation library to reflect any changes to the System Approved by the Commission. A version update sheet shall be included with the System documentation, and the documentation on file shall have the most recent version from the configuration management database. A complete submission of the System documentation shall be made every five (5) years that reflects all Approved changes to-date.		

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7.18.6	**Training Records**		
1141	The Contrator shall keep accurate training records on all Contrator and Commission personnel. The Commission shall be permitted to audit personnel qualifications and training records at any time. Evidence of completion of training by Contrator and Commission personnel involved with system maintenance shall be provided to the Commission upon request.		
7.19	**Safety**		
1142	The Contrator shall adhere to all applicable safety standards and guidelines for working on or around energized Equipment and in a Maintenance environment, including but not limited to the following:		
	· the Commission safety procedures and guidelines are on the Commission website: https://www.paturnpike.com/business/engineering_standards.aspx;		
	· State of Pennsylvania safety procedures and guidelines;		
	· OSHA (Occupational Safety and Health Administration);		
	· NEMA (National Electrical Manufacturers Association);		
	· NEC (National Electrical Code);		
	· FHWA (Federal Highway Administration), and		
	· any other local, state, or Federal ordinance, procedure, or guideline that provides for a safe operation and working environment.		
7.20	**Maintenance and Protection of Traffic (MPT)**		
1143	The Contrator shall perform maintenance and protection of traffic associated with the Cashless Tolling Maintenance Phase. The Contrator in conjunction with the Commission shall develop as a part of the Maintenance Plan an MPT procedure in accordance with standards on the Commission website: https://www.paturnpike.com/business/engineering_standards.aspx for Approval by the Commission.		
1144	The Contrator shall adhere to the Approved MPT Plan when setting up, working under MPT and restoring lanes to traffic. The Contrator shall also work with the Commission to coordinate MPT Work and to adhere to the Commission advance notice requirements for Work in the lanes, both on a scheduled and emergency basis. All lane closures shall also be coordinated with the Commission Traffic Operations Center and public relations.		
7.21	**Maintenance and Software Support Records**		
1145	The Commission shall have access to all Maintenance and service records at any time for review and audit, upon reasonable notice. The Contrator shall provide monthly reports generated in the System that permits the Commission to evaluate Contrator's Maintenance performance.		
1146	The Contrator's Maintenance manager shall maintain current, complete and accurate records for all Maintenance and Software Support Services activities. The Contrator's Maintenance manager shall institute procedures that make sure Maintenance staff enters complete information into the MOMS before closing a work order or trouble ticket.		
1147	All preventive and predictive Maintenance activities shall be reported in the same manner as corrective or emergency Maintenance activities by the Contrator. The information shall be contained on the MOMS and shall be made available through various MOMS reports.		
7.21.1	**Maintenance Summary Reports**		
1148	The Contrator shall provide the Maintenance summary reports to the Commission on a monthly basis in advance of the Monthly Meeting. The format of the Monthly reports shall be Approved by the Commission and included in the Maintenance Plan.		
1149	The Contrator shall provide an annual Executive Summary report to the Commission that summarizes the Contrator's performance for the Maintenance Year. The format of the Executive Summary reports shall be Approved by the Commission and included in the Maintenance Plan.		
1150	Maintenance summary reports shall also be readily available in detail or summary format to the Commission applicable personnel via the network on a daily, weekly, or other time period basis determined by the Commission. The Maintenance summary report shall include but not be limited to:		
	· a summary of the Contrator's performance for the month under review noting all accomplishments and deficiencies;		
	· all Maintenance and System performance reports that show Contrator's compliance to Maintenance performance requirements;		
	· detailed listing of failures and the impacted subsystems where Contrator's and System performance for the month were not in compliance with the performance requirements;		
	· any exceptions the Contrator believes are non-chargeable failures that Contrator is not responsible for;		
	· detailed list of parts replaced as a result of Maintenance actions, with an identification of warranty versus non-warranty replacement;		
	· status of removed parts and Equipment with an aging status for parts under repair or replacement (serial numbers, being repaired in Maintenance shop, purchase replacement part);		
	· trend analysis for repetitive failure;		
	· status of spare parts inventory;		

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	· staffing report detailing positions and staff hours worked;		
	· staff performance trends;		
	· Software and firmware releases implemented;		
	· major Maintenance activities that occurred and are scheduled to occur;		
	· incidents that invoked emergency response or resulted in loss of toll revenue and		
	· summary of work order, Software defects and trouble tickets by priority and category.		
7.22	**Performance Requirements for the Cashless Tolling System and Liquidated Damages**		
	The Cashless Tolling System shall be designed, developed, tested, implemented and Maintained to meet the performance requirements specified herein without the need for manual intervention. The Contrator shall facilitate performance monitoring by reporting performance in clearly measurable terms. The Commission will conduct a review of the Contrator's performance on a monthly basis, as defined in the Maintenance Plan utilizing all required System reports provided by the Contrator and reports generated by the MOMS		
1151	The Contrator shall submit backup data that confirms Contrator compliance to Maintenance performance requirements.		
1152	A detailed listing of the Cashless Tolling System alarms for each subsystem shall be created with their priority levels in support of the performance data and Contrator's responsibility shall be clearly identified. The Contrator shall be responsible for all alarms and work orders that are escalated to the Contrator.		
1153	Monthly performance reviews shall begin at the commencement of the Maintenance and Software Support Services Contract at each tolling point and shall continue monthly through the period of the Maintenance and Software Support Services Contract. The first month's performance shall be reviewed in month two of the Maintenance and Software Support Services Contract.		
1154	Liquidated damages associated with monthly performance reviews, if applicable, shall be assessed beginning in month two for month one performance and shall continue through the period of the Maintenance and Software Support Services Contract.		
7.22.1	**Acknowledgement of All Priority Events**		
1155	The Contrator shall acknowledge receipt of all Priority events within thirty (30) minutes of failure/event notification.		
1156	For the purposes of assessing Liquidated Damages, ninety five (95) percent of failure or priority event shall be acknowledged within thirty (30) minutes of receipt.		
1157	The Contrator may be assessed Liquidated Damages of $250 if the acknowledgment percent is below the ninety five (95) percent threshold every month for every Priority event not acknowledged within the time frame specified in these Requirements.		
7.22.2	**Time to Respond and Repair (TTRR)**		
1158	The Contrator shall respond to and complete repair of Priority 1 failures/events as follows:		
	· Level 2 failures: respond and complete repair within two (2) hours of failure/event notification.		
	· Level 3 failures: be onsite within twenty-four (24) hours of Approval to commence Work and once the Contrator is onsite, two (2) hour time to complete repair.		
	The Contrator may be assessed Liquidated Damages of $100 per occurrence for every additional delay of one (1) hour to respond and complete repair of Priority 1 failures/events.		
	The Contrator may be assessed Liquidated Damages of $500 per occurrence for every additional twenty-four (24) hour delay over the twenty-four (24) hours for being onsite and ready to commence Work.		
1159	The Contrator shall respond to and complete repair of Priority 2 failure/events as follows:		
	· Level 2 failures: respond and complete repair within four (4) hours of failure/event notification.		
	· Level 3 failures: be onsite within forty-eight (48) hours of Approval to commence Work and once the Contrator is onsite, two (2) hour time to complete repair.		
	The Contrator may be assessed Liquidated Damages of $100 per occurrence for every additional delay of one (1) hour to respond and complete repair of Priority 2 failures/events.		
	The Contrator may be assessed Liquidated Damages of $300 per occurrence for every additional twenty-four (24) hour delay over the forty-eight (48) hours for being onsite and ready to commence Work.		
1160	The Contrator shall respond to and complete repair of Priority 3 failures/events as follows:		
	· Level 2 failures: respond and complete repair within twenty-four (24) hours of failure/event notification.		
	· Level 3 failures: No longer than three (3) calendar days to respond and complete repair upon Approval to commence Work.		
	The Contrator is not subject to any Liquidated Damages for Priority 3 failures/events.		
7.22.3	**Mean Time Between Failures (MTBF)**		
1161	The Contrator shall meet MTBF requirements for the following elements of the Cashless Tolling System Components:		
	· Redundant Zone Controller: 30,000 hours		
	· Automatic Vehicle Identification (AVI) System: 20,000 hours		
	· Automatic Vehicle Classification (AVC) System: 30,000 hours		
	· License Plate Image Capture and Processing System (LPICPS): 30,000 hours		

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	· Cashless Tolling Servers: 50,000 hours		
	· Network Devices: 50,000 hours		
1162	The reliability of the System components shall be calculated based on the following MTBF calculation: MTBF = # units x measuring period (hours)/ # chargeable failures		
1163	The Contrator may be assessed Liquidated Damages of $500 for each Sub-system not meeting requirement due to Contrator and Contrator System failure.		
7.22.4	**Availability**		
1164	The Contrator shall meet availability requirements for the following elements of the Cashless Tolling System:		
	· Lane Availability - Maintenance from Above or Below Toll Zones: 99.95%;		
	· Cashless Toll Host System – 99.95%;		
1165	Availability for each of the above systems shall be calculated as follows: Availability = 100% - [Total number of hours of downtime in time period X / Total hours in time period X].		
1166	For every month in which the Toll Zone lane is available less than the minimum requirement, Contrator may be subject to Liquidated Damages of:		
	· a 0.5% adjustment to the monthly Maintenance fee for availability of 99.90% and up to 99.94%;		
	· a 2% adjustment to the monthly Maintenance fee for availability of 99.50% and up to 99.89%;		
	· a 5% adjustment to the monthly Maintenance fee for availability of 99% and 99.49%.		
	· a 10% adjustment to the monthly Maintenance fee for availability below 99%.		
1167	For every month in which the Cashless Toll Host System is available less than the minimum requirement, Contrator may be subject to Liquidated Damages of:		
	· a 1% adjustment to the monthly Maintenance fee for availability of 99.90% and up to 99.94%;		
	· a 2% adjustment to the monthly Maintenance fee for availability of 99.50% and up to 99.89%;		
	· a 5% adjustment to the monthly Maintenance fee for availability of 99% and 99.49%.		
	· a 10% adjustment to the monthly Maintenance fee for availability below 99%.		
7.22.5	**Transmission of TSL and VEL to the In-Lane Cashless Tolling System**		
1168	Successfully and accurately transmit the Comprehensive Home and Away/Interoperable TSL to each of the zone controllers within thirty (30) minutes of the Cashless Toll Host System receipt of the TSL.		
	The Contrator may be subject to Liquidated Damages of $500 per occurrence per one (1) hour delay for failure to successfully and accurately transmit the TSL to each of the zone controller.		
1169	Successfully and accurately transmit the VEL (if exercised) to the In-lane Cashless Tolling System within thirty (30) minutes of the Cashless Toll Host System receipt of the VEL (if exercised).		
1170	The Contrator is not subject to any Liquidated Damages.		
7.22.6	**Transmission of Toll Rate Tables and Schedules**		
1171	If toll rates are implemented in the lanes the when toll rate changes are scheduled, successfully and accurately transmit the toll rate tables and schedules to the zone controllers within twenty-four (24) hours prior to the effective date of the toll rate change.		
1172	When toll rate changes are scheduled, successfully and accurately transmit the toll rate tables and schedules to the existing CSC/VPC system within twenty-four (24) hours prior to the effective date of the toll rate change.		
1173	The Contrator may be subject to Liquidated Damages of $500 per occurrence per twenty-four (24) hour delay per System not receiving the data.		
7.22.7	**Transaction Processing and Transmission Requirements**		
1174	One hundred (100) percent of transactions (AVI and video transactions) from the roadway systems shall be obtained and reconciled by the Cashless Toll Host System with an accuracy of one hundred (100) percent.		
1175	One hundred (100) percent of transactions (AVI and video transactions) identified to be pursuable and non-pursuable shall be successfully and accurately transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent within twenty-four (24) hours of vehicle transit.		
1176	For failure to accurately process and reconcile one hundred (100) percent of all transactions and successfully and accurately transmit pursuable and non-pursuable transactions to the existing CSC/VPC system within twenty-four (24) hours of vehicle transit, the Contrator shall be subject to Liquidated Damages of $50 per twenty-four (24) hour delay per 1,000 transactions.		
7.22.8	**Image Processing Requirements**		
1177	One hundred (100) percent of images (video) from the roadway systems shall be successfully and accurately transmitted to the existing CSC/VPC system and reconciled to the transactions with an accuracy of one hundred (100) percent.		
1178	One hundred (100) percent of images identified to be pursuable shall be successfully and accurately transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent within twenty-four (24) hours of vehicle transit.		

Functional Requirements			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
1179	For failure to accurately process and reconcile one hundred (100) percent of all images and successfully and accurately transmit pursuable images to the existing CSC/VPC system within twenty-four (24) hours of vehicle transit, the Contrator shall be subject to Liquidated Damages $50 per twenty-four (24) hour delay per 1,000 images set.		
7.22.9	**License Plate Extraction Accuracy - if the option to implement OCR/ALPR is exercised**		
1180	The Contrator shall provide an accurate OCR/ALPR process which shall result in the Cashless Tolling System extracting the license plate, plate type, and jurisdiction with an accuracy of at least 99.95 percent on minimum seventy (70) percent of video transactions generated in the lanes.		
1181	For error rates above the 0.05 percent rate, the Contrator may be subject to Liquidated Damages of $10 for each license plate in error.		
7.22.10	**Spare Parts Availability**		
1182	The Contrator shall maintain the required physical inventory of agreed to spare parts in accordance with the Contract.		
1183	For failure to maintain spare parts inventory at adequate levels for the month, the Contrator may be subject to Liquidated Damages of $500 per month for each failure to maintain spare parts inventory per the counts required.		
7.22.11	**Preventive Maintenance**		
1184	The Contrator shall perform preventive Maintenance on the Cashless Tolling System according to Approved Preventive Maintenance schedule.		
1185	The Contrator is not subject to any Liquidated Damages for this Maintenance Work.		
7.23	**Security**		
1186	All Contrator personnel shall be subject to appropriate security and background checks to the satisfaction of the Commission. The Contrator shall obtain written Approval from the Commission for all service personnel and each Contrator personnel shall be required to sign an acceptable use agreement.		
1187	Contrator's personnel shall be issued Commission identification badges and shall wear such identification badges at all times when on the Commission property. Use of such identification badges for purposes other than work associated with the Contract will result in termination of the employee from the Contract and possible other legal or disciplinary action.		
1188	The services and Work performed under the Contract are considered highly confidential and the Contrator personnel shall at all times comply with applicable current computer and data industry standards with regard to data and information security. All employees of the Contrator shall not discuss their work with unauthorized personnel or any individuals not directly associated with the Commission.		
1189	Contrator's personnel can only use Commission -assigned workstations, servers, and laptops to communicate with the Cashless Tolling System while on Commission premises.		
1190	The Commission will identify and designate a primary point of contact for the Contrator. Under most circumstances, the Contrator will limit communication with Commission authorized staff and to the Commission's designated point of contact unless otherwise directed by the Commission.		
1191	Discussion by the Contrator of any Services or Work performed under the Contract with the media, in oral presentations, in written publications, or in any other form, not related to this Contract shall be Approved in advance by the Commission.		
7.24	**Confidentiality**		
1192	The Contrator shall keep all information regarding its activities pursuant to this Contract confidential and will communicate such information only with authorized Commission personnel or designated representatives.		

Exhibit F-7
Price Proposal

Sheet 1
PTC Cashless Tolling System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

	Base Contract Southern Beltway Cost ($)	Optional Future Facilities Cost ($)	Grand Total Cost ($)
Implementation Phase			
In-lane System Cost (Sheet 2/Sheet 6)	$ -	$ -	$ -
Toll Host/System Cost (Sheet 3/Sheet 6)	$ -	$ -	$ -
Total Implementation Phase	$ -	$ -	$ -
Maintenance Phase			
In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Maintenance Phase	$ -	$ -	$ -
Optional Functionality			
In-lane OCR/ALPR and Enforcement Notification Pricing (Sheet 2/Sheet 6)	$ -	$ -	$ -
Total Optional Functionality	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY	$ -	$ -	$ -
Optional Extension Phase			
Extension #1 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #1 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Extension #2 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #2 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Optional Extension Phases	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL EXTENSION PHASES	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY AND OPTIONAL EXTENSION PHASES	$ -	$ -	$ -

Grand Total Dollars

Officer Signature Date

Typed Name, Title, Address and Phone Number

Sheet 2
Base and Optional In-lane System Cost by Roadway
(Summary Only)

Highway	Planned Go-Live Date	Toll Zone Type	Total # of Toll Zones	Cost Per Toll Zone ($)	Total Cost Toll Zones ($)
Base Contract					
Southern Beltway/Findlay Connector	Q3 2019	Location TBD	6	$ -	$ -
		Facility Server			$ -
Total Base Contract			6		$ -
Optional OCR/ALPR and Enforcement Notification					
Southern Beltway/Findlay Connector	Q3 2019				$ -
Total Optional OCR/ALPR and Enforcement Notification					

Sheet 3
Toll Host/System Cost
(Summary Only)

Item #	Description	Unit	Total Cost ($)
1	System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered	LS	$ -
2	Communications Equipment	LS	$ -
3	Zone Controller Software Costs	LS	$ -
4	Software (GUI, Back-end), Host System, MOMS, DVAS and License	LS	$ -
5	Design Documentation	LS	$ -
6	User, Maintenance, and Project Documentation	LS	$ -
7	Training (manuals, materials and delivery)	LS	$ -
8	Factory Acceptance Test	LS	$ -
9	On-Site First Installation Test	LS	$ -
10	Installation and Commissioning Test	LS	$ -
11	System Operational and Acceptance Test	LS	$ -
12	Third Party Warranty and Licenses	LS	$ -
13	Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services	LS	$ -
14	Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services	LS	$ -
15	Spare Parts and Equipment Year 1 - Warranty Year	LS	$ -
16	Insurance and Bonding	LS	$ -
17	Project Management	LS	$ -
18	Engineering and Design	LS	$ -
19	Transition Costs	LS	$ -
	Total Toll Host/System Costs		$ -

Sheet 4
Base and Optional
In-Lane System Hardware Maintenance and Software Support Services Cost
(Summary Only)

Item #	Description of Items	Total Annual Cost ($)	
	Base Contract Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	See Note #1
2	Year 2 of Maintenance	$ -	
3	Year 3 of Maintenance	$ -	
4	Year 4 of Maintenance	$ -	
5	Year 5 of Maintenance	$ -	
6	Year 6 of Maintenance	$ -	
7	Year 7 of Maintenance	$ -	
	Total In-Lane System Hardware Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2 - 7)	$ -	
	Optional Extension 1 Costs		
8	Extension 1 - Year 1 of Maintenance	$ -	
9	Extension 1 - Year 2 of Maintenance	$ -	
10	Extension 1 - Year 3 of Maintenance	$ -	
11	Extension 1 - Year 4 of Maintenance	$ -	
12	Extension 1 - Year 5 of Maintenance	$ -	
	Total Extension 1 Cost	$ -	
	Optional Extension 2 Costs		
13	Extension 2 - Year 1 of Maintenance	$ -	
14	Extension 2 - Year 2 of Maintenance	$ -	
15	Extension 2 - Year 3 of Maintenance	$ -	
16	Extension 2 - Year 4 of Maintenance	$ -	
17	Extension 2 - Year 5 of Maintenance	$ -	
	Total Extension 2 Cost	$ -	
Total Base and Optional In-Lane System Hardware Maintenance and Software Support Services (excluding Warranty)		$ -	

Note 1: Year 1 of Maintenance Total carried forward to Sheet 3 - In-Lane System Hardware Maintenance and Software Support Services. Not included in the total of Sheet 4.

Sheet 5
Base and Optional
Toll Host/System Maintenance and Software Support Services Cost
(Summary Only)

Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)	
	Base Contract Maintenance Costs			
1	Year 1 of Maintenance (Warranty)	$ -	$ -	See Note #1
2	Year 2 of Maintenance	$ -	$ -	
3	Year 3 of Maintenance	$ -	$ -	
4	Year 4 of Maintenance	$ -	$ -	
5	Year 5 of Maintenance	$ -	$ -	
6	Year 6 of Maintenance	$ -	$ -	
7	Year 7 of Maintenance	$ -	$ -	
	Total Toll Host/System Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2-7)		$ -	
	Optional Extension 1 Costs			
8	Extension 1 - Year 1 of Maintenance	$ -	$ -	
9	Extension 1 - Year 2 of Maintenance	$ -	$ -	
10	Extension 1 - Year 3 of Maintenance	$ -	$ -	
11	Extension 1 - Year 4 of Maintenance	$ -	$ -	
12	Extension 1 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 1 Cost		$ -	
	Optional Extension 2 Costs			
13	Extension 2 - Year 1 of Maintenance	$ -	$ -	
14	Extension 2 - Year 2 of Maintenance	$ -	$ -	
15	Extension 2 - Year 3 of Maintenance	$ -	$ -	
16	Extension 2 - Year 4 of Maintenance	$ -	$ -	
17	Extension 2 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 2 Cost		$ -	
Total Base and Optional Toll Host/System Maintenance and Software Support Services (excluding Warranty)			$ -	

Note 1: Year One of Maintenance Total carried forward to Sheet 3 - Toll Host/System Maintenance and Software Support Services. Not included in the total of Sheet 5.

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only)

Optional Future System Implementation Cost		
Item #	Description of Items	Total Annual Cost ($)
	Future In-Lane System Cost (by Zone Type)	
1	Zone Type 1 (3+1+1)	$ -
2	Zone Type 2 (3+2+0)	$ -
3	Zone Type 3 (2+1+1)	$ -
4	Zone Type 4 (2+2+0)	$ -
5	Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -
6	Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -
7	Host Cost	$ -
8	Facility Server	$ -
9	Optional OCR/ALPR and Enforcement Notification	$ -
	Total Future System Implementation Cost	$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only)

Optional Future In-Lane System Hardware Maintenance and Software Support Services Cost Summary		
Item #	Description of Items	Total Annual Cost ($)
	Maintenance Costs	
1	Year 1 of Maintenance (Warranty)	$ -
2	Year 2 of Maintenance	$ -
3	Year 3 of Maintenance	$ -
4	Year 4 of Maintenance	$ -
5	Year 5 of Maintenance	$ -
6	Year 6 of Maintenance	$ -
	Total Future In-Lane System Hardware Maintenance and Software Support Services Cost (Maintenance Years 1 - 6)	$ -
	Optional Extension 1 Costs	
7	Extension 1 - Year 1 of Maintenance	$ -
8	Extension 1 - Year 2 of Maintenance	$ -
9	Extension 1 - Year 3 of Maintenance	$ -
10	Extension 1 - Year 4 of Maintenance	$ -
11	Extension 1 - Year 5 of Maintenance	$ -
	Total Extension 1 Cost	$ -
	Optional Extension 2 Costs	
12	Extension 2 - Year 1 of Maintenance	$ -
13	Extension 2 - Year 2 of Maintenance	$ -
14	Extension 2 - Year 3 of Maintenance	$ -
15	Extension 2 - Year 4 of Maintenance	$ -
16	Extension 2 - Year 5 of Maintenance	$ -
	Total Extension 2 Cost	$ -
Total Future In-Lane System Hardware Maintenance and Software Support Services		$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only)

Optional Future Toll Host/System Maintenance and Software Support Services Cost Summary			
Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)
	Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	$ -
2	Year 2 of Maintenance	$ -	$ -
3	Year 3 of Maintenance	$ -	$ -
4	Year 4 of Maintenance	$ -	$ -
5	Year 5 of Maintenance	$ -	$ -
6	Year 6 of Maintenance	$ -	$ -
	Total Future Toll Host/System Maintenance and Software Support Services Cost (Maintenance Years 1-6)		$ -
	Optional Extension 1 Costs		
7	Extension 1 - Year 1 of Maintenance	$ -	$ -
8	Extension 1 - Year 2 of Maintenance	$ -	$ -
9	Extension 1 - Year 3 of Maintenance	$ -	$ -
10	Extension 1 - Year 4 of Maintenance	$ -	$ -
11	Extension 1 - Year 5 of Maintenance	$ -	$ -
	Total Extension 1 Cost		$ -
	Optional Extension 2 Costs		
12	Extension 2 - Year 1 of Maintenance	$ -	$ -
13	Extension 2 - Year 2 of Maintenance	$ -	$ -
14	Extension 2 - Year 3 of Maintenance	$ -	$ -
15	Extension 2 - Year 4 of Maintenance	$ -	$ -
16	Extension 2 - Year 5 of Maintenance	$ -	$ -
	Total Extension 2 Cost		$ -
	Total Future Toll Host/System Maintenance and Software Support Services		$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Zone Type 5 (2+1+1) Space Frame with Maint Below					
1. Redundant Toll Zone Controller and In-lane Electronics[1]					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -	$ -	$ -
2. AVI System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVI System			$ -	$ -	$ -
3. AVC System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVC System			$ -	$ -	$ -
4. LPICPS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total LPICPS			$ -	$ -	$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
5. Communications Equipment					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
6. Equipment Racks					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Equipment Racks			$ -	$ -	$ -
7. DVAS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total DVAS			$ -	$ -	$ -
8. Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Commissioning Test			$ -	$ -	$ -
Total			$ -	$ -	$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Facility Server			$ -	$ -	$ -
Total with Facility Server			$ -	$ -	$ -
Labor Check (from Sheet 2-2, cell F50) should equal cell E77				$ -	
Optional OCR/ALPR and Enforcement Notification					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -

Note 1: All hardware/software provided under this Contract should be included in these costs.
Note 2: Use the additional rows as needed to itemize each components
Note 3: All roadways are current Year Cost.
Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.
Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work
Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 2-2 Back-up
In-Lane System - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			In-Lane Cost		
			Rate	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
1 System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered					
Host Servers - equipment, purchase, install, configure and test	0	$ -	$ -	$ -	$ -
Storage Works	0	$ -	$ -	$ -	$ -
Back-up Library	0	$ -	$ -	$ -	$ -
Other Third-party Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Hardware, Third Party SW and Installation not Otherwise Covered			$ -	$ -	$ -
2 Communications Equipment					
Switches	0	$ -	$ -	$ -	$ -
LAN HW	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
3 Zone Controller Software Costs					
Zone Controller Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Zone Controller Software Costs			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
4 Software (GUI, Back-end), Host System, MOMS, DVAS and License					
Host Software	0	$ -	$ -	$ -	$ -
MOMS	0	$ -	$ -	$ -	$ -
DVAS	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Software (GUI, Back-end), Host System, MOMS, DVAS and License			$ -	$ -	$ -
5 Design Documentation					
Lane Drawings	0	$ -	$ -	$ -	$ -
SDDD	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Design Documentation			$ -	$ -	$ -
6 User, Maintenance, and Project Documentation					
Documents/Manuals	0	$ -	$ -	$ -	$ -
Maintenance Manual	0	$ -	$ -	$ -	$ -
Installation Manual	0	$ -	$ -	$ -	$ -
Project Plans	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total User, Maintenance and Project Documentation			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
7 Training (manuals, materials and delivery)					
Maintenance Training	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Training			$ -	$ -	$ -
8 Factory Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Factory Acceptance Test			$ -	$ -	$ -
9 On-Site First Installation Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total On-Site First Installation Test			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
10 Installation and Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Installation and Commissioning Test			$ -	$ -	$ -
11 System Operational and Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Operational and Acceptance Test			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
12 Third Party Warranty and Licenses					
DB Licenses	0	$ -	$ -	$ -	$ -
OS Licenses	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Third Party Warranty and Licenses			$ -	$ -	$ -
13 Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services					
Year 1 Warranty (from sheet 4)					$ -
Total Warranty First Year of Operation - In-Lane System Maintenance and Software Support Services					$ -
14 Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					
Year 1 Warranty (from sheet 5)					$ -
Total Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					$ -
15 Spare Parts and Equipment Year 1 - Warranty Year					
Spare Year 1 (From Sheet 3-2) In-Lane Spares					$ -
Spare Year 1 (From Sheet 3-2) Host System Spares					$ -
Total Spare Parts and Equipment Year 1 - Warranty Year					$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
16 Insurance and Bonding					
Insurance and Bonding	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Insurance and Bonding			$ -	$ -	$ -
17 Project Management					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Project Management			$ -	$ -	$ -
18 Engineering and Design					
Lane Installation Design Drawings	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Engineering and Design			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Host System					
19 Transition Costs					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Transition Costs			$ -	$ -	$ -
Total Host System Costs			$ -	$ -	$ -
Labor Check (from Sheet 3-3, cell F50) should equal cell F174				$ -	

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
In-Lane Spares (All Roadways)	Year 1 - Warranty Year		
1. Redundant Toll Zone Controller and In-lane Electronics[1]			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Serial Controllers	0	$ -	$ -
Power Supply	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -
2. AVI System			
AVI Reader Modules	0	$ -	$ -
AVI Antennas	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVI System			$ -
3. AVC System			
Primary AVDC Sensor	0	$ -	$ -
AVDC Detector Cards	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVC System			$ -
4. LPICPS			
Front Cameras	0	$ -	$ -
Rear Cameras	0	$ -	$ -
Illuminators	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total LPICPS			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
In-Lane Spares (All Roadways)	Year 1 - Warranty Year		
5. Communications Equipment			
Switches	0	$ -	$ -
Power Supply	0	$ -	$ -
Router	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
6. Equipment Racks			
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Equipment Racks			$ -
7. DVAS			
Cameras	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total DVAS			$ -
8. UPS			
Batteries	0	$ -	$ -
Power Supply	0	$ -	$ -
Inverter	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total UPS			$ -
Spare Cost Warranty Year (Year 1) In-Lane System			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
In-Lane Spares (All Roadways)	Year 1 - Warranty Year		
Toll Host/System Spares Cost	Year 1 - Warranty Year		
1. System Hardware			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Miscellaneous	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total System Hardware			$ -
2. Communications Equipment			
LAN Equipment	0	$ -	$ -
Power Supply	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
Spare Cost Warranty Year (Year 1) Toll Host/System			$ -
Total Spare Cost Warranty Year (Year 1) In-Lane and Toll Host/System			$ -

Sheet 3-3 Back-up
Toll Host/System -
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			Toll Host/System Costs		
			Rate	Hours	Total System Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs - Southern Beltway				
Total Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 6 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 7 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Year 7 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 7	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -
	% increase/decrease from previous year				#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 7 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 7 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%	Escalation % (Over Previous Year)	3.0%
			LOADED HOURLY BILLING RATES Year 7 of Maintenance		LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance	
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#REF!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 1		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 1		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 2			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 2			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -
	% increase/decrease from previous year				#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 1 Quantity	Year 1 Unit Evaluation Cost including Labor	Year 1 Total Evaluation Cost	Year 2 Quantity	Year 2 Unit Evaluation Cost including Labor	Year 2 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						
Zone Type 2 (3+2+0)	$ -	$ -						
Zone Type 3 (2+1+1)	$ -	$ -						
Zone Type 4 (2+2+0)	$ -	$ -						
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						
Estimated Zones Ordered/Costs								
Estimated Zones Ordered/Costs Volume Discount								
Estimated Zones Ordered/Costs (less volume discount)								
Incremental Host Cost (based on zone quantity)								
Facility Server (if applicable)	$ -	$ -						
Estimated Incremental Host Cost and Facility Server Cost								
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -						
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 3 Quantity	Year 3 Unit Evaluation Cost including Labor	Year 3 Total Evaluation Cost	Year 4 Quantity	Year 4 Unit Evaluation Cost including Labor	Year 4 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -				14	$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -				6	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				4	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)		3.0%	Year 5	Year 5	Year 5	Year 6	Year 6	Year 6
	2016 Values for Other Direct Cost	2016 Labor	Quantity	Unit Evaluation Cost including Labor	Total Evaluation Cost	Quantity	Unit Evaluation Cost including Labor	Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				8	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -				14	$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 7 Quantity	Year 7 Unit Evaluation Cost including Labor	Year 7 Total Evaluation Cost	Year 8 Quantity	Year 8 Unit Evaluation Cost including Labor	Year 8 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				20	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				6	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						28		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)								
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 9 Quantity	Year 9 Unit Evaluation Cost including Labor	Year 9 Total Evaluation Cost	Year 10 Quantity	Year 10 Unit Evaluation Cost including Labor	Year 10 Total Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost less discount by Zone Type
Zone Type 1 (3+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -	40	$ -	$ -				$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -	2	$ -	$ -				$ -	$ -
Estimated Zones Ordered/Costs			42		$ -				$ -	
Estimated Zones Ordered/Costs Volume Discount					$ -				$ -	
Estimated Zones Ordered/Costs (less volume discount)					$ -				$ -	
Incremental Host Cost (based on zone quantity)					$ -				$ -	
Facility Server (if applicable)	$ -	$ -	3	$ -	$ -				$ -	
Estimated Incremental Host Cost and Facility Server Cost					$ -				$ -	
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs					$ -				$ -	
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -		$ -	$ -				$ -	
Volume Discount by Zone Quantity:										
Volume Discount for 10- 19 Zones	0.00%									
Volume Discount for 20- 29 Zones	0.00%									
Volume Discount for 30- 39 Zones	0.00%									
Volume Discount for over 40 Zones	0.00%									

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
	2016 Values		
Zone Type 1 (3+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 2 (3+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 3 (2+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 4 (2+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
Zone Type 6 (3+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL UNIT ($)	LABOR ($)	TOTAL COST ($)
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Host Cost (if applicable) Lump Sum for First Year of Implementation			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Per Zone Cost (if applicable)			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -

Note 1: All costs are current Year Cost.

Note 2: All hardware/software provided under this Contract should be included in these costs.

Note 3: All roadways are current Year Cost.

Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.

Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work

Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK		LOADED HO RATES
				Zone Type 1 (3+1+1)		Zone Type 2 (3+2+0)		Zone Typ
			2016 Loaded Labor Rate	2016 Values		2016 Values		2016
				Hours	Total Labor Cost	Hours	Total Labor Cost	Hours
1		Project Principal	$ -	0	$ -	0	$ -	0
2		Project Manager	$ -	0	$ -	0	$ -	0
3		Technical /Software Development Manager	$ -	0	$ -	0	$ -	0
4		Lane Technical Lead	$ -	0	$ -	0	$ -	0
5		Installation Manager	$ -	0	$ -	0	$ -	0
6		Maintenance Manager	$ -	0	$ -	0	$ -	0
7		Quality Assurance/Test Manager	$ -	0	$ -	0	$ -	0
8		CADD Technician	$ -	0	$ -	0	$ -	0
9		Database Analyst	$ -	0	$ -	0	$ -	0
10		Deputy Project Manager	$ -	0	$ -	0	$ -	0
11		Electrician Helper	$ -	0	$ -	0	$ -	0
12		Hardware Engineer/Lead	$ -	0	$ -	0	$ -	0
13		Installation Supervisor	$ -	0	$ -	0	$ -	0
14		Installation Technician	$ -	0	$ -	0	$ -	0
15		Licensed Electrical Engineer	$ -	0	$ -	0	$ -	0
16		Licensed Electrician	$ -	0	$ -	0	$ -	0
17		Maintenance Manager	$ -	0	$ -	0	$ -	0
18		Maintenance Supervisor	$ -	0	$ -	0	$ -	0
19		Maintenance Technician	$ -	0	$ -	0	$ -	0
20		Network Administrator	$ -	0	$ -	0	$ -	0
21		Network Engineer	$ -	0	$ -	0	$ -	0
22		Senior Maintenance Technician	$ -	0	$ -	0	$ -	0
23		Software Architect	$ -	0	$ -	0	$ -	0
24		Software Development Engineer	$ -	0	$ -	0	$ -	0
25		Software Development Manager	$ -	0	$ -	0	$ -	0
26		Software Lead	$ -	0	$ -	0	$ -	0
27		Software Programmer I	$ -	0	$ -	0	$ -	0
28		Software Programmer II	$ -	0	$ -	0	$ -	0
29		Software Programmer III	$ -	0	$ -	0	$ -	0
30		System Administrator	$ -	0	$ -	0	$ -	0
31		System Analyst	$ -	0	$ -	0	$ -	0
32		Technical Writer	$ -	0	$ -	0	$ -	0
33			$ -	0	$ -	0	$ -	0
34			$ -	0	$ -	0	$ -	0
35			$ -	0	$ -	0	$ -	0
36			$ -	0	$ -	0	$ -	0
37			$ -	0	$ -	0	$ -	0
38			$ -	0	$ -	0	$ -	0
39			$ -	0	$ -	0	$ -	0
40			$ -	0	$ -	0	$ -	0
41			$ -	0	$ -	0	$ -	0
42			$ -	0	$ -	0	$ -	0
43			$ -	0	$ -	0	$ -	0
44			$ -	0	$ -	0	$ -	0
	Total Labor Cost				$ -		$ -	

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	URLY BILLING BY TASK	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK		LOADED HO RATES
			e 3 (2+1+1)	Zone Type 4 (2+2+0)		Zone Type 5 (2+1+1) Space Frame with Maint Below		Zone Type 6 Frame with
			Values	2016 Values		2016 Values		2016
			Total Labor Cost	Hours	Total Labor Cost	Hours	Total Labor Cost	Hours
1		Project Principal	$ -	0	$ -	0	$ -	0
2		Project Manager	$ -	0	$ -	0	$ -	0
3		Technical /Software Development Manager	$ -	0	$ -	0	$ -	0
4		Lane Technical Lead	$ -	0	$ -	0	$ -	0
5		Installation Manager	$ -	0	$ -	0	$ -	0
6		Maintenance Manager	$ -	0	$ -	0	$ -	0
7		Quality Assurance/Test Manager	$ -	0	$ -	0	$ -	0
8		CADD Technician	$ -	0	$ -	0	$ -	0
9		Database Analyst	$ -	0	$ -	0	$ -	0
10		Deputy Project Manager	$ -	0	$ -	0	$ -	0
11		Electrician Helper	$ -	0	$ -	0	$ -	0
12		Hardware Engineer/Lead	$ -	0	$ -	0	$ -	0
13		Installation Supervisor	$ -	0	$ -	0	$ -	0
14		Installation Technician	$ -	0	$ -	0	$ -	0
15		Licensed Electrical Engineer	$ -	0	$ -	0	$ -	0
16		Licensed Electrician	$ -	0	$ -	0	$ -	0
17		Maintenance Manager	$ -	0	$ -	0	$ -	0
18		Maintenance Supervisor	$ -	0	$ -	0	$ -	0
19		Maintenance Technician	$ -	0	$ -	0	$ -	0
20		Network Administrator	$ -	0	$ -	0	$ -	0
21		Network Engineer	$ -	0	$ -	0	$ -	0
22		Senior Maintenance Technician	$ -	0	$ -	0	$ -	0
23		Software Architect	$ -	0	$ -	0	$ -	0
24		Software Development Engineer	$ -	0	$ -	0	$ -	0
25		Software Development Manager	$ -	0	$ -	0	$ -	0
26		Software Lead	$ -	0	$ -	0	$ -	0
27		Software Programmer I	$ -	0	$ -	0	$ -	0
28		Software Programmer II	$ -	0	$ -	0	$ -	0
29		Software Programmer III	$ -	0	$ -	0	$ -	0
30		System Administrator	$ -	0	$ -	0	$ -	0
31		System Analyst	$ -	0	$ -	0	$ -	0
32		Technical Writer	$ -	0	$ -	0	$ -	0
33			$ -	0	$ -	0	$ -	0
34			$ -	0	$ -	0	$ -	0
35			$ -	0	$ -	0	$ -	0
36			$ -	0	$ -	0	$ -	0
37			$ -	0	$ -	0	$ -	0
38			$ -	0	$ -	0	$ -	0
39			$ -	0	$ -	0	$ -	0
40			$ -	0	$ -	0	$ -	0
41			$ -	0	$ -	0	$ -	0
42			$ -	0	$ -	0	$ -	0
43			$ -	0	$ -	0	$ -	0
44			$ -	0	$ -	0	$ -	0
	Total Labor Cost		$ -		$ -		$ -	

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	URLY BILLING S BY TASK
			(3+1+1) Space n Maint Below
			Values
			Total Labor Cost
1		Project Principal	$ -
2		Project Manager	$ -
3		Technical /Software Development Manager	$ -
4		Lane Technical Lead	$ -
5		Installation Manager	$ -
6		Maintenance Manager	$ -
7		Quality Assurance/Test Manager	$ -
8		CADD Technician	$ -
9		Database Analyst	$ -
10		Deputy Project Manager	$ -
11		Electrician Helper	$ -
12		Hardware Engineer/Lead	$ -
13		Installation Supervisor	$ -
14		Installation Technician	$ -
15		Licensed Electrical Engineer	$ -
16		Licensed Electrician	$ -
17		Maintenance Manager	$ -
18		Maintenance Supervisor	$ -
19		Maintenance Technician	$ -
20		Network Administrator	$ -
21		Network Engineer	$ -
22		Senior Maintenance Technician	$ -
23		Software Architect	$ -
24		Software Development Engineer	$ -
25		Software Development Manager	$ -
26		Software Lead	$ -
27		Software Programmer I	$ -
28		Software Programmer II	$ -
29		Software Programmer III	$ -
30		System Administrator	$ -
31		System Analyst	$ -
32		Technical Writer	$ -
33			$ -
34			$ -
35			$ -
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
	Total Labor Cost		$ -

Sheet 6-4 Back-up
Optional Incremental Host System Cost
(2016 Values)

DESCRIPTION OF ITEMS	PER ZONE COST ($)
Incremental Host System Cost Per Zone (1 - 9 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (1-9 Zones)	$ -
Incremental Host System Cost Per Zone (10 - 19 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (10-19 Zones)	$ -
Incremental Host System Cost Per Zone (20 - 29 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (20-29 Zones)	$ -
Incremental Host System Cost Per Zone (30 - 39 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (30-39 Zones)	$ -
Incremental Host System Cost Per Zone (40 or more Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (40 or more Zones)	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs				
Year 1 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 2 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 3 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 4 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 5 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	76	12	$ -
Year 6 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Future Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 1		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 1		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 2			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 2			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year				#DIV/0!			#DIV/0!

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 7-1
Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
CADD Technician	$ -
Database Administrator	$ -
Database Analyst	$ -
Deputy Project Manager	$ -
Electrician Helper	$ -
Finance Manager (Design/Implementation)	$ -
Finance Manager (Operations)	$ -
Hardware Engineer/Lead	$ -
Host Technical Lead	$ -
Installation Manager	$ -
Installation Supervisor	$ -
Installation Technician	$ -
Lane Technical Lead	$ -
Licensed Electrical Engineer	$ -
Licensed Electrician	$ -
Maintenance Manager	$ -
Maintenance Supervisor	$ -
Maintenance Technician	$ -
Network Administrator	$ -
Network Engineer	$ -
Operations Manager	$ -
Project Manager	$ -
Project Principal	$ -
Quality Assurance/Test Manager	$ -
Senior Maintenance Technician	$ -
Software Architect	$ -
Software Development Engineer	$ -
Software Development Manager	$ -
Software Lead	$ -
Software Programmer I	$ -
Software Programmer II	$ -
Software Programmer III	$ -
System Administrator	$ -
System Analyst	$ -
Systems Engineer	$ -
Technical /Software Development Manager	$ -
Technical Writer	$ -
Training Manager	$ -

Sheet 7-1

Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -

Note 1: CPI adjustments will be made to the Cost based on actual CPI change for the previous year beginning with Operations Year 2 as further described in the Price Proposal Instructions.

Exhibit D - Payment Schedule

A. Payments for Implementation Cashless Tolling System Design and Development					$ -
Payment Number	**Payment Milestone**	**Pay Items**	**% Paid**	**Cum.% Paid**	
A-1	Notice to Proceed	Notice to Proceed.	5.00%	5.00%	$ -
A-2	Cashless Toll System Development and Administration	Project Management Documents Approved (PMP, Project Schedule, QA Plan and SDP, SRD).	10.00%	15.00%	$ -
A-3	Cashless Toll System Design	Business Rules and Design Documents Approved (BRD and SDDD) .	15.00%	30.00%	$ -
A-4	Cashless Toll System Factory Acceptance Testing (FAT)	Test Documentation and Factory Acceptance Testing Approved.	15.00%	45.00%	$ -
A-5	Cashless Toll System Onsite First Installation Testing (OFIT)	Installation Plan Approved, Test Documentation and Onsite Integration Testing Approved - First Site.	10.00%	55.00%	$ -
A-6	Cashless Toll System Manuals and Training	Manuals Approved and Training Approved.	5.00%	60.00%	$ -
A-7	Cashless Toll System Commissioning	Installation and Commissioning Approved Ready for Go Live.	15.00%	75.00%	$ -
A-8	Cashless Toll System Acceptance	Operational and Acceptance Test Approved, As-builts Approved and Implementation Phase Closed Out.	25.00%	100.00%	$ -

B. Payments Related to Hardware, Equipment and Off-the-Shelf Software				$ -
Payment Number	**Payment Milestone**	**% Paid**	**Cum.% Paid**	
B-1	Ordering Verified Southern Beltway	20.00%	20.00%	$ -
B-2	Purchased, Received and Verified Southern Beltway	60.00%	80.00%	$ -
B-3	Installation Approved Southern Beltway	20.00%	**100.00%**	$ -

Exhibit F-8
Proposer Questions Form

Proposer Questions

Pennsylvania Turnpike Commission (PTC) **RFP #: 16-10495-7252**

#	Page	Section	Section Description	Proposer Question	Commission Response
1.					
2.					
3.					
4.					

Exhibit G
Draft Contract

EXHIBIT G: DRAFT CONTRACT

This **AGREEMENT** is made this _____ day of _____, 2016, between the **Pennsylvania Turnpike Commission ("COMMISSION")**, an instrumentality of the Commonwealth of Pennsylvania, with principal offices at 700 South Eisenhower, Blvd., Middletown, Pennsylvania 17057 (mailing address: P. O. Box 67676, Harrisburg, PA 17106-7676);

AND

_____ ("CONTRACTOR"), [insert the legal status of CONTRACTOR such as a Pennsylvania (or Foreign) corporation (or partnership, LLC, LLP, etc)], with its principal office at **[insert address].**

WITNESSETH:

WHEREAS, the COMMISSION desires the Services for furnishing, installation, testing, Implementation and Maintenance of a cashless tolling roadway toll collection system at designated tolling locations with an associated central computer system;

WHEREAS, by Act No. 211 of the General Assembly of the Commonwealth of Pennsylvania, approved May 21, 1937, and its amendments , the COMMISSION is authorized and empowered to enter into an Agreement with the CONTRACTOR;

WHEREAS, the COMMISSION desires to retain the Services of CONTRACTOR upon the following terms; and

NOW, **THEREFORE** in consideration of these mutual covenants, and intending to be legally bound, the parties agree as follows:

1 CONTRACTOR's Scope of Work

The CONTRACTOR will perform the Scope of Work described in RFP #16-10495-7252 dated February 17, 2016, titled "*Cashless Tolling System Implementation and Maintenance"* as amended and Conformed, including all associated attachments and exhibits. These documents are made part of this Agreement by reference.

In the event that any provision of this Agreement is inconsistent or in conflict with another provision, the order of precedence shall be as follows:

a) Supplemental Agreements

b) Executed Agreement (including items i, ii, and iii immediately below and excluding items c-i below)

i. Exhibit H Insurance Requirements

ii. Exhibit I DB Requirements

iii. Exhibit J Software License and Escrow

c) Exhibit A Conformed Scope of Work

d) Exhibit B- Defined Terms and Acronyms

e) Exhibit C Price Proposal Instructions

f) Exhibit D Payment Schedule

g) Exhibit E Approved Project Implementation Schedule

h) Exhibit F: Price Proposal

i) Exhibit C Request for Proposals, including any addenda thereto (in case of conflict the most recent addenda will apply)

j) Exhibit J: Prevailing Wage Rate Requirements

k) COMMISSION General Provisions for Facility Projects (GPFP) Dated October 2015

l) Exhibit D CONTRACTOR's Proposal

2 Provisions of Services, Resources and Staffing

The CONTRACTOR shall provide all resources, personnel, Equipment, Software and supplies necessary to perform the Services. The CONTRACTOR shall provide the Services described herein in a competent and professional manner, in conformance with the highest industry standards, to the satisfaction of the COMMISSION. The COMMISSION shall be entitled to full and prompt cooperation by the CONTRACTOR in all aspects of the Services. The COMMISSION shall have the right to inspect the performance of such Services at any time, and the CONTRACTOR shall fully and promptly cooperate with the COMMISSION in the execution of such inspections. At the request of the COMMISSION, the CONTRACTOR shall promptly remove from assignment to the performance of Services pursuant to this Agreement any employee, Subcontractor, or any other person performing Services hereunder. Notwithstanding the foregoing Key Team personnel shall be subject to the provisions of Section 3 CONTRACTOR's Key Team Personnel. The COMMISSION recognizes that such removal of an employee from the performance of Services pursuant to this Agreement will not necessarily result in the termination or demotion of such employee.

The CONTRACTOR recognizes the paramount importance of the successful operation of the System for which these Services are sought. Inasmuch as these Services are provided for the convenience and benefit of the public, the CONTRACTOR acknowledges that the quality and timeliness of such Services are the essence of this Agreement.

a) The CONTRACTOR agrees that it will at all times employ, maintain and assign to the performance of the Services a sufficient number of competent and qualified professionals and other personnel to perform the Services in a timely manner.

b) The CONTRACTOR warrants and represents that its staff personnel have the proper skill, training, background, knowledge, experience, rights, authorizations, integrity, character and licenses necessary to perform the Services described herein, in a competent and professional manner.

c) The CONTRACTOR agrees to comply with all provisions of all federal, state, and local laws, ordinances, rules, and regulations that are applicable to the performance of Services pursuant to this Agreement, and to obtain in its name all necessary licenses and permits.

If in order to provide such Services the CONTRACTOR must make an external connection to the COMMISSION's data communications infrastructure and/or access COMMISSION information systems, the CONTRACTOR shall in all respects comply with all COMMISSION policies and procedures regarding such connections and information systems access and undertake whatever actions are necessary in the discretion of the COMMISSION to ensure such compliance. The CONTRACTOR shall be responsible for all costs associated with ensuring that its own network security measures comply with all COMMISSION policies and procedures regarding external connections

3 CONTRACTOR's Key Team Personnel

The CONTRACTOR has designated an individual Project Principal identified in the Proposal, who is an officer authorized to sign the Agreement and any amendments to the Agreement and to speak for and make commitments on behalf of the CONTRACTOR.

The CONTRACTOR shall designate a project manager ("CONTRACTOR Project Manager"), identified in the Proposal, who shall act as the primary point of contact in all matters on behalf of CONTRACTOR. The CONTRACTOR Project Manager shall assign other individuals as contacts with regard to specific functional areas of the Work, subject to the Approval of the COMMISSION. The COMMISSION shall have input into determining who shall be assigned as Project Manager for CONTRACTOR and the CONTRACTOR may not change the CONTRACTOR Project Manager without consulting with the COMMISSION and obtaining Approval from the COMMISSION as set forth in the following paragraph.

The CONTRACTOR's Proposal identifies certain job categories as "Key Team Personnel" for the Agreement. Key Team Personnel for this Project are identified in the CONTRACTOR's Proposal and shall be Approved as part of the Project Management Plan as set forth in Exhibit A Scope of Work. Key Team Personnel shall be required to work in the position indicated in the Proposal and Approved Project Management Plan, unless Approval is obtained from the COMMISSION. The CONTRACTOR shall obtain the COMMISSION's prior Approval to any desired changes in Key Team Personnel or any

significant reduction in the level of effort for such Key Team Personnel, which consent shall not be unreasonably withheld. Should the COMMISSION determine during the term of the Agreement that the list of Key Team Personnel does not include personnel essential to the successful performance of the Work, the COMMISSION may require the CONTRACTOR to add any existing job category to such list.

If the COMMISSION becomes dissatisfied with the performance of any person designated as Key Team Personnel performing under this Agreement, the COMMISSION shall notify CONTRACTOR in writing. Within ten (10) Business Days of receipt of such Notice, the CONTRACTOR shall either propose a replacement person for evaluation and Approval by the COMMISSION or present to the COMMISSION a plan for correcting the incumbent's performance deficiencies within a period of thirty (30) Calendar Days thereafter. If either the COMMISSION rejects the plan presented by CONTRACTOR or the incumbent's performance deficiencies are not corrected to the COMMISSION's satisfaction within the thirty (30) Calendar Day plan period Approved by the COMMISSION, then the CONTRACTOR shall, within ten (10) Business Days after rejection of the plan or expiration of the thirty (30) Business Day plan period, propose to the COMMISSION a replacement person for evaluation and Approval by the COMMISSION.

4 COMMISSION Responsibilities

4.1 COMMISSION Responsibilities

The COMMISSION will provide the CONTRACTOR the necessary workspace, infrastructure and support as further set forth in the **Exhibit A Scope of Work**, including Attachment 11 Maintenance Responsibility Matrix.

4.2 Authority of the COMMISSION Project Manager

The CONTRACTOR hereby acknowledges the COMMISSION Project Manager ("the Project Manager") has the authority to determine in the first instance all questions of any nature whatsoever arising out of, under, or in connection with, or in any way related to or on account of, this Agreement including, without limitation: questions as to the value, acceptability of the Services; questions as to either party's fulfillment of its obligations under this Agreement; negligence, fraud or misrepresentation before or subsequent to execution of this Agreement; questions as to the interpretation of **Exhibit A Scope of Work**; and claims for damages, compensation and losses.

The Project Manager shall act as the designated representative of the COMMISSION in all matters relating to the Project.

The Project Manager may give orders to the CONTRACTOR to do Work that he determines to be necessary for the CONTRACTOR to fulfill the CONTRACTOR's obligations under this Agreement.

If requested by the CONTRACTOR, the Project Manager will promptly provide appropriate

explanations and reasons for his determinations and orders hereunder.

The CONTRACTOR shall be bound by all determinations or orders and shall promptly obey and follow every order of the Project Manager, including the withdrawal or modification of any previous order and regardless of whether the CONTRACTOR agrees with the Project Manager's determination or order. Orders shall be in writing, unless not practicable, in which event any oral order must be confirmed in writing by the Project Manager as soon thereafter as practicable.

4.3 Responsibility for Operational Policy

The CONTRACTOR acknowledges that the COMMISSION shall be responsible for making all policy decisions regarding the operation of the System. The CONTRACTOR agrees to provide advice and recommendations with respect to policy issues as directed by the COMMISSION. The CONTRACTOR agrees to implement any and all changes in providing Services pursuant to this Agreement as a result of policy changes implemented by the COMMISSION. The CONTRACTOR agrees to act in an expeditious and fiscally sound manner in providing the COMMISSION with input regarding the time and cost (if any) to implement said changes and in executing the activities required to implement said changes.

5 General Cooperation Requirements

During the course of this Agreement, the COMMISSION may undertake or award other agreements for additional work or professional services, including but not limited to separate agreements with different contractors, including the civil construction work related to **Exhibit A Scope of Work**, including but not limited to the roadway, gantries and shelters and associated work. It is critical that close coordination with interfacing contractors occurs throughout the term of this Agreement. CONTRACTOR shall fully cooperate with the COMMISSION and the parties to all other contracts and carefully integrate and schedule its own work with said parties.

5.1 Interface Control Document Development and Ongoing Cooperation Requirements

a) The CONTRACTOR shall fully cooperate with the COMMISSION and its designated contractor(s) as necessary to develop interface control documents (ICDs) as set forth in **Exhibit A Scope of Work**. The ICDs shall specify all specifications, parameters, system requirements, programming interfaces and all other elements to effectively and completely interface the Toll Collection System components being provided by the various interfacing contractors. In this event, the CONTRACTOR shall be responsible for its respective roles and responsibilities as set forth in the Scope of Work.

b) In the event that the elements comprising the Toll Collection System do not properly

interface with each other, and the CONTRACTOR's and the interfacing contractors' collective efforts to correct same are untimely or unsuccessful, or the interfacing contractors fail to cooperate with other the COMMISSION designated and/or interfacing contractor(s) to the satisfaction of the COMMISSION and as determined at the COMMISSION's sole discretion then in addition to the COMMISSION's other available remedies, the COMMISSION shall have the right to, in whole or in part, withhold and/or require a refund of payments to the CONTRACTOR and/or the interfacing contractors involved in developing the ICD.

5.2 Additional Coordination and Cooperation Requirements

a) It is anticipated that work by one or more CONTRACTORS of the COMMISSION, may be in progress adjacent to or within the limits of this project during progress of the Work on this contract. The CONTRACTOR shall work closely with the COMMISSION and any other contractors who will be working for the COMMISSION for the purpose of coordinating any activity which may affect both contractors. Examples of this work include but are not limited to installation of toll equipment, equipment testing, power and conduit installation and maintenance and protection of traffic.

b) Should problems in coordination with other contractors occur the CONTRACTOR shall make the COMMISSION aware of these problems immediately and shall take steps to address the problems and mitigate any delays or additional costs. CONTRACTOR shall not commit or permit any act that will interfere with the performance of work by any other contractor or by the COMMISSION.

c) CONTRACTOR shall cooperate with all other contractors or forces performing construction or work of any other nature within or adjacent to the limits of the Work specified in order to avoid any delay or hindrance to the other contractors or forces. The COMMISSION reserves the right to perform other or additional work at or near the site (including material sources) at any time, by the use of other forces.

d) When two or more contractors of the COMMISSION are employed on related or adjacent work, each shall conduct their operations in such a manner as not to cause any unnecessary delay or hindrance to the other.

e) Each contractor shall be responsible to the other for all damage to work, to persons or property caused to the other by their operations, and for loss caused the other due to unnecessary delays or failure to finish the work within the time specified for completion.

f) Upon Approval of the Design by the CONTRACTOR, CONTRACTOR shall assume responsibility for the Design to the extent that if the civil work is installed as designed and does not meet the performance requirements of this Scope of Work, the CONTRACTOR

shall be responsible for the costs of redesign, civil rework and additional equipment costs.

6 Duration of the Agreement

The term of this Agreement shall be for a period of ten (10) years inclusive of the Implementation and Maintenance Phases and shall commence on the Effective Date as defined below.

The Effective Date shall be fixed by the COMMISSION after the Agreement has been fully executed by the CONTRACTOR and by the COMMISSION, and after all approvals required by the COMMISSION contracting procedures have been obtained.

Two five (5) year optional extensions may be exercised at the sole discretion of the COMMISSION. This Agreement will not terminate until the COMMISSION accepts all Work as complete and tenders final payment to the CONTRACTOR and the conditions identified in for Project Acceptance identified in Section 10.1 Acceptance are met.

7 Termination

The COMMISSION shall have the right, in its sole discretion, to postpone, suspend, abandon or terminate this Agreement at any time and for any reason, and such action shall in no event be deemed a breach of contract. In the event the COMMISSION exercises its right to postpone, suspend, abandon or terminate this Agreement, the COMMISSION will provide the CONTRACTOR with forty-five (45) Calendar Days prior written notice, unless otherwise provided in Section 22 Notice of Default/Chance to Cure and Termination.

a) The CONTRACTOR shall, upon receipt of such notice, unless otherwise directed by the COMMISSION:
    i) stop work on the date specified in the notice (the "Effective Date");
    ii) take such action as may be necessary for the protection and preservation of the COMMISSION's materials and property, including data and other aspects of the Con CONTRACTOR tractor's performance which are not completed;
    iii) cancel orders;
    iv) assign to the COMMISSION and deliver to the Site or any other location designated by the COMMISSION any non-cancelable orders for material and Equipment that is not capable of use except in the performance of Services pursuant to this Agreement and has been specifically fabricated for the sole purpose of this Agreement and not incorporated in the Services;
    v) take no action which will increase the amounts payable by the COMMISSION under this Agreement; and

vi) take all steps necessary to assure a smooth transition of Services to a new CONTRACTOR or the COMMISSION.

b) In the event that the COMMISSION exercises its right to postpone, suspend, abandon or terminate this Agreement, the COMMISSION will pay the CONTRACTOR's actual cost or the fair and reasonable value, whichever is less, of:

i) the Services completed in accordance with this Agreement up to the Effective Date;

ii) non-cancelable materials and Equipment that are not capable of use except in the performance of Services pursuant to this Agreement and have been specifically fabricated for the sole purpose of this Agreement but not incorporated in the Services; and

iii) reasonably incurred non-cancelable labor and lease obligations not included in the transition service included in Exhibit A Scope of Work.

c) In no event shall any payments under this Section exceed the compensation for such items identified in (b).

d) The amount due hereunder shall be offset by all payments already made to the CONTRACTOR.

e) All payments made pursuant to this Section shall be accepted by the CONTRACTOR in full satisfaction of all claims against the COMMISSION arising out of the postponement, suspension, abandonment, or termination, including consequential damages.

f) All payments pursuant to this Section are subject to audit.

g) Upon such a postponement, suspension, abandonment or termination, the CONTRACTOR must within ten (10) Business Days deliver to the COMMISSION all Records, documents and data pertaining to Services rendered under this Agreement.

8 Succession

In the event that this Agreement is terminated for convenience or default or upon the Agreement completion date or expiration of the Agreement term or any extensions thereof, the CONTRACTOR shall cooperate with the COMMISSION to facilitate a smooth succession to the COMMISSION's selected successor for the Services. In addition to the requirements contained in Section 5.2 End of Contract Transition of the Scope of Work, the CONTRACTOR agrees to:

a) make all operational Records, documents, data, systems, and facilities required to maintain day-to-day operations of the Services being rendered under this Agreement available on or before the date of such termination, suspension, or expiration;

b) make all other Records, documents, data and Software which is licensed to the

COMMISSION and pertaining to the Services rendered for this Agreement available within thirty (30) Calendar Days upon written notice or as otherwise provided in the executed License Agreement;

c) make all necessary provisions for transferring any leases held by the CONTRACTOR to the COMMISSION; and

d) make all necessary provisions for securing, providing, and/or granting Software licenses to continue operations.

9 Compensation

9.1 General

For the performance of Work and Services as described in this Agreement, the CONTRACTOR shall be paid in accordance with Exhibit D Payment Schedule and Exhibit F CONTRACTOR's Price Proposal and CONTRACTOR agrees to accept such amount as full compensation for such Services. In no event shall payment pursuant to this Agreement exceed $[], unless this Agreement is amended. The COMMISSION's obligation to pay for such Services is contingent upon the COMMISSION's finding that the CONTRACTOR has performed in a competent and professional manner satisfactory to the COMMISSION and has satisfactorily performed and met the requirements of the Agreement, including of Exhibit A Scope of Work and Exhibit D Payment Schedule.

9.2 Set-Offs and Adjustments

The CONTRACTOR agrees that the COMMISSION may set off the amount of any state tax liability or other obligation of the CONTRACTOR or its subsidiaries to the Commonwealth against any payments due the CONTRACTOR under any contract with the COMMISSION.

9.3 Pricing Adjustment for Non-Compliance with Performance Standards

If in the performance of Services the CONTRACTOR does not meet or exceed the Performance Standards identified in **Exhibit A Scope of Work**, the COMMISSION shall reduce the amount it would otherwise pay CONTRACTOR for such Services pursuant to the adjustment amounts set forth in Section 7.22.4, Availability of the Scope of Work and in Section 24.3 of this Agreement.

9.4 Method and Times of Payment

To receive payment, the CONTRACTOR must submit a monthly invoice to the COMMISSION

documenting the Services rendered and any adjustments applicable for the invoice period under consideration. Such invoice shall be in a form and contain such detail Approved by the COMMISSION that meets the monthly reporting and invoicing requirements identified in **Exhibit A Scope of Work** including the Approved Project Management Plan.

The CONTRACTOR agrees to provide the COMMISSION with such detailed documentation substantiating fees and disbursements as the COMMISSION may request.

10 Phases of the Project

CONTRACTOR shall perform all planning, Design and Software development, testing and installation Services and complete and have Approval for all corresponding Submittals, Deliverables and Milestones required in Exhibit A Scope of Work for the Implementation Phase. The Implementation Phase shall begin at Notice to Proceed and shall be complete upon System Acceptance and close-out, as further defined in this Agreement and in **Exhibit A Scope of Work**.

The CONTRACTOR's Operations and Maintenance Phase responsibilities shall begin upon Approval of Go-Live, subject to the warranty provisions pursuant to Section 16.1 and the payment provisions pursuant to Section 9.4 Method and Times of Payment, and shall continue for up to six years or until the expiration of the Initial Contract Term, whichever occurs first and also shall include any Contract renewals or extensions thereof. Commencement of this Phase shall not relieve the CONTRACTOR of any of its responsibilities to complete all Requirements and the Scope of Work of the Implementation Phase and does not waive any of the rights of the Agencies in this regard. The Operations and Maintenance Phase may be extended in accordance with Section 6 Duration of Agreement, at the sole discretion of the COMMISSION.

10.1 Acceptance

10.1.1 General

Provisional Acceptance for the Implementation Phase of the Project will be achieved when the COMMISSION, in its sole discretion, determines that CONTRACTOR has complied with the completion Requirements set forth for that Phase under the Agreement, including in Exhibit A Scope of Work, pursuant to Section 28.1.2.

Final Acceptance of the Implementation Phase will be considered by the COMMISSION to have occurred, when the COMMISSION has received and Approved all Project documents, drawings, Software, Interface data, test data, manuals and other Deliverables for the Implementation Phase, and CONTRACTOR shall have successfully completed the Acceptance Testing and when in the COMMISSION's sole discretion CONTRACTOR has met all other obligations under the Agreement, including in Exhibit A Scope of Work, pursuant to Section 28.1.3

Project Acceptance will be considered to have occurred when the COMMISSION, in its sole discretion, determines that CONTRACTOR has complied with all of the completion Requirements set forth for the Project for both the Implementation and Operations and Maintenance Phases, set forth in Exhibit A Scope of Work pursuant to Section 28.1.4

The COMMISSION's beneficial use of the Project Deliverables during any phase prior to Project Acceptance shall not constitute Acceptance of any Deliverable, nor shall such use give rise to equitable claim for adjustment.

10.1.2 Provisional Acceptance

The COMMISSION, in its sole discretion, may grant a Provisional Acceptance of the Implementation Phase if it deems that the Work on the Phase is substantially complete, and the following conditions have been met:

a) CONTRACTOR has passed the COMMISSION Commissioning test and Go-Live has been Approved, as set forth in **Exhibit A Scope of Work**;

b) CONTRACTOR, in the COMMISSION's sole determination, has substantially passed and has been given Provisional Approval of the Acceptance test; and

c) A punch list of items not yet in compliance with **Exhibit A Scope of Work** has been delivered by the CONTRACTOR and has been verified by the COMMISSION and Approved as being complete.

The COMMISSION shall issue a written Notice of Provisional Acceptance upon satisfaction of the conditions listed above in items 1 through 3. The occurrence of Provisional Acceptance shall not relieve the CONTRACTOR of any of its continuing obligations hereunder.

10.1.3 Final Acceptance of Implementation Phase

Final Acceptance of the Implementation Phase shall be deemed to have occurred when all of the following conditions have been met:

a) Completion and any additional required information contained in item 2 through 8 below, if applicable. The CONTRACTOR shall provide a Final Acceptance letter certification to close out the Phase. The certification shall include but not be limited to: total costs associated with the Phase, date of Work

b) Successful completion and Approval of the Operational and Acceptance Test(s), as applicable, by the COMMISSION, as defined in **Exhibit A Scope of Work**;

c) Delivery by the CONTRACTOR and Approval by the COMMISSION of all Deliverables, including As-Built Documentation/Drawings, as defined in **Exhibit A Scope of Work**;

d) Any and all punch list items have been satisfactorily completed and Approved by the COMMISSION;

e) An Affidavit has been delivered to the COMMISSION signed by the CONTRACTOR, stating all debts and claims of Suppliers and Subcontractors have been paid and/or settled;

f) All CONTRACTOR claims for the Phase are deemed to be resolved by the COMMISSION, and the CONTRACTOR has submitted a statement that no such requests or protests will be applied for; any and all claims under this Agreement are resolved, and that no such claims will be made;

g) All of CONTRACTOR's other obligations under the Agreement shall have been satisfied in full or waived in writing by the COMMISSION; and

h) The COMMISSION shall have delivered to the CONTRACTOR a Notice of Final Acceptance for the Phase.

10.1.4 Project Acceptance of All Phases

Project Acceptance shall mean the Final Acceptance for all Phases, including both Implementation and Operations and Maintenance, and shall be deemed to have occurred when all of the following conditions have been met:

a) The CONTRACTOR shall provide a Project Acceptance letter certification to close out the Agreement. The certification shall include but not be limited to: total costs associated with the Agreement, date of Work completion and any additional required information contained in item 2 through 9 below, if applicable;

b) The Implementation Phase has been Accepted and closed out in accordance with Section 10.1.3;

c) The CONTRACTOR has met all transition and succession requirements pursuant to **Exhibit A Scope of Work** and this Agreement;

d) The CONTRACTOR has deposited all current escrow materials required under this Agreement, including all necessary documentation and support materials;

e) The CONTRACTOR has provided the COMMISSION with all required materials, fixtures, furnishings, Equipment and Software; documentation and manuals, either owned by or licensed to the COMMISSION, pursuant to this Agreement. All such materials have been verified by the COMMISSION to be in good, working order;

f) An Affidavit has been delivered to the COMMISSION, signed by the CONTRACTOR, stating all debts and claims of Suppliers and Subcontractors have been paid and/or settled;

g) All CONTRACTOR claims for the Phase are deemed to be resolved by the COMMISSION, and the CONTRACTOR has submitted a statement that no such requests or protests will be applied for; any and all claims under this Agreement are resolved, and that no such claims will be made;

h) All Requirements identified in the System Requirements (Volume I), as described in **Exhibit A Scope of Work** shall be verified and Certified by the CONTRACTOR to be successfully delivered, and shall be Approved by the COMMISSION;

i) All the CONTRACTOR's other obligations under the Agreement shall have been satisfied in full or waived by the COMMISSION; and

j) The COMMISSION shall have delivered to the CONTRACTOR a Notice of Project Acceptance for all implementation Phases to the effect of the foregoing.

10.1.5 Project Completion

Project Completion shall be deemed to have occurred when all obligations under this Agreement have been successfully performed by the CONTRACTOR, including but not limited to all retentions owed to the CONTRACTOR have been released by the COMMISSION and, when the COMMISSION has delivered a Notice of Project completion to the effect of the foregoing.

11 Submittals, Approvals and Schedule

11.1 Submittals

The CONTRACTOR's submittal requirements and submittal schedule shall be as set out in the CONTRACTOR's Approved Program Management Plan and the CONTRACTOR's Approved Implementation Phase Schedule, in accordance with Exhibit A Scope of Work. The baseline schedule Approved after Notice to Proceed shall establish accepted dates by which the CONTRACTOR shall submit required permits, Documents, and applications, and Design; develop; deliver; install; test, and implement the required System, including all necessary documents in support thereof.

The COMMISSION's written Approval will be required for submittals. The COMMISSION will Approve or reject such submittals, providing an explanation of any reasons for rejection in a manner agreed to in the Approved Project Management Plan. Such Approval or rejection will be provided within a specified number of days of submittal according to the Approved baseline submittal schedule, unless prior to the expiration of the specified period, the COMMISSION provides the CONTRACTOR with written notification that the review period for a particular submittal will be extended and stating the time in which it will be completed. In the event that the review period expires on a non-Business Day, the review period shall be extended through the next Business day. The COMMISSION's right to extend the review period is intended to allow flexibility in special circumstances where the nature of the submittal requires more involved review, and not as a diminution of the COMMISSION's obligation to promptly review submittals.

The CONTRACTOR shall not be held responsible for delays in Schedule due to delays in Approvals completely beyond the control of the CONTRACTOR as specified elsewhere in this Contract. However,

nothing in this section relieves the CONTRACTOR of its responsibility to provide complete and accurate submittals and Deliverables that meet the Scope of Work. If submittals are rejected by the COMMISSION due to the CONTRACTOR's failure to meet the Requirements of the submittal or Deliverable or to address the previous comments provided by the COMMISSION, the CONTRACTOR shall be held responsible for all associated delays.

11.2 Project Implementation Schedule

Within ten (10) days of the Implementation Phase Notice to Proceed the CONTRACTOR shall submit a baseline Project Implementation Schedule in accordance with the requirements set forth in Section 5.1.7 of Exhibit A Scope of Work for baseline Approval. The Approved Project Implementation Schedule at the time of the execution of the Agreement is included as Exhibit E, Project Implementation Schedule.

The CONTRACTOR shall clearly label each revision to the Approved Project Implementation Schedule, pursuant to the Requirements of the Approved Project Management Plan. Submission of the monthly progress updates against the Approved Schedule shall not release or relieve the CONTRACTOR from full responsibility for completing the Work within the time set forth in the current Approved Schedule for the associated Work. If the CONTRACTOR causes delays and fails or refuses to implement measures sufficient to bring its Work back into conformity with the current Approved Schedule, its right to proceed with any or all portions of the associated Work may be terminated under the provisions of the Contract. However, in the event the COMMISSION, in its sole determination, should permit the CONTRACTOR to proceed, the COMMISSION's permission shall in no way operate as a waiver of its rights nor shall it deprive the COMMISSION of its rights under any other provisions of the Contract.

Any changes to a baseline Approved schedule require Approval and a change to the Contract.

12 General Guaranty

Neither Acceptance of the System and Services or payment therefor, nor any provision in this Agreement, nor partial or entire use of the System and Services by the COMMISSION shall constitute an Acceptance of System and Services not performed in accordance with this Agreement or relieve the CONTRACTOR of liability for any express or implied warranties or responsibility for faulty materials or workmanship

13 Extra Work and Engineering Change Orders (ECO)

13.1 General

The COMMISSION reserves the right to make alterations and to permit deviations from this Agreement and execute options and to require such changes in the extent or manner of performance of the Work and/or Services as are determined by the COMMISSION to be reasonably necessary. All changes to this

Agreement beyond the limited capacity engineering change order (ECO) process described in the following section shall be implemented by means of a Supplemental Agreement signed by both parties. Reference herein to this Agreement shall be deemed to include any supplement hereto. Unless otherwise agreed to by the COMMISSION in writing, the CONTRACTOR's Payment Schedule and Price Proposal, including labor rates identified in the Price Proposal, shall apply to all Supplemental Agreements. If cost for additional Work and/or Services cannot be established on the basis of the Price Proposal, the Payment Schedule, a catalog or market price of a commercial product sold in substantial quantities, or on the basis of prices set by law or regulation, the CONTRACTOR is required to submit to the COMMISSION detailed cost breakdowns, including information on labor and materials costs, overhead and other indirect costs.

All supplemental Work and/or Services shall be Approved by the COMMISSION and fully set forth in a Supplemental Agreement executed by the COMMISSION and the CONTRACTOR. CONTRACTOR shall not commence such additional Work and/or Services prior to the issuance of a Notice to Proceed for such additional Work and/or Services.

13.2 Limited Engineering Change Order (ECO) Process

As a part of its scope the Contractor may be required to perform Work that cannot be quantified at this time and is therefore considered to be part of a limited engineering change order (ECO) process. As part of finalization of this Agreement, the COMMISSION shall Approve a capped amount of additional costs available via the ECO process above the total final Approved value of the Price Proposal. As examples, these ECOs could be related to the support, engineering, Maintenance (including emergency Maintenance), modifications, growth and enhancement of all toll technologies owned and operated by the COMMISSION not otherwise identified in this Agreement. The Work may include, but is not limited to disciplines such as Design; Software development; infrastructure engineering; engineering analysis; recommendations; testing; fabrication; prototype programs; data collection activities; installation; civil work; minor roadway work; reporting, and Documentation.

The need for an ECO may be identified by the COMMISSION or through recommendations from the Contractor. The COMMISSION will verify budgetary allocations for ECOs prior to Approval. Once an ECO has been identified and requested by the COMMISSION, the Contractor shall provide an estimate for the Work in accordance with latest COMMISSION ECO process. Unless otherwise agreed to by the COMMISSION in writing, the Payment Schedule and Price Proposal, including labor rates identified in the Price Proposal, shall apply. If cost for the ECO cannot be established on the basis of the Price Proposal, the Payment Schedule, a catalog or market price of a commercial product sold in substantial quantities, or on the basis of prices set by law or regulation, the Contractor is required to submit to the COMMISSION detailed cost breakdowns, including information on labor and materials costs, overhead and other indirect costs.

All ECOs shall be Approved in accordance with the COMMISSION ECO process and fully set forth in a

Task Work Order executed by the Commission and the Contractor. The Contractor shall not commence any Work prior to the issuance of a Task Work Order for an ECO. Reference herein to this Agreement, shall be deemed to include any ECO that has an executed Task Work Order.

14 License and Software

A Software License and Escrow Agreement shall be attached to the final Contract as Exhibit J. The License and Escrow Agreement shall include the terms and conditions set forth as follows:

14.1 Description of License

The CONTRACTOR hereby grants to the COMMISSION, for purposes of operating the System, an unlimited, fully-paid-up, royalty-free, perpetual, universal, irrevocable, non-exclusive license: (i) to use, maintain, disclose, modify, adapt, and improve any and all Software and other Equipment; notwithstanding the foregoing, any modifications not made by the CONTRACTOR, its Subcontractors or agents shall be subject to CONTRACTOR validation in order to continue to maintain applicable warranties; (ii) to use all resulting versions, modifications, adaptations and improvements of any and all Software and other Equipment; (iii) to make, have made, use, distribute and display copies, reproductions, and derivative works of any and all Software and documentation; and (iv) to permit any other person or entity providing Services to the COMMISSION to do any and all of the foregoing (i) through (iii). The foregoing license includes the right to use any systems, processes, methods, applications, technical data specifications and other documentation (including those provided by the CONTRACTOR, any third party or currently used by the COMMISSION) comprised or practiced by the Equipment or that are necessary or useful to operate the System.

14.2 Scope of License and Escrow

All rights and licenses granted to the COMMISSION under this Agreement shall be exercisable at any time by the COMMISSION and each of the persons and entities provided Services by the CONTRACTOR. The license shall permit the COMMISSION to add at any time, entities or persons to receive CONTRACTOR Services with no additional license fees charged to COMMISSION. The foregoing shall apply to the COMMISSION, and such persons and entities and their respective successors and assigns. CONTRACTOR shall include, without requirement of any payment or provision of any consideration other than or in addition to that which is expressly specified by this Agreement, the right of the COMMISSION and each other person or entity referred to in this subparagraph:

a) to utilize the System (including all Equipment or related documentation), in whole or in part, in connection with Services provided by or to the COMMISSION or such other persons or entities, without regard to present or future location, including for purposes of technical support,

Maintenance or repair;

b) to make multiple copies of the Software and related documentation for purposes of the exercise of the COMMISSION's rights and licenses hereunder;

c) to use the Software and related documentation on or in connection with multiple processors, components obtained by or on behalf of the COMMISSION from the CONTRACTOR or from third parties, and systems (including the System) utilized by the COMMISSION or any person or entity providing Services to or on behalf of the COMMISSION;

d) to maintain and modify the Software subject to the CONTRACTOR validation set forth in Section14.1. Description of License subparagraph(i) and to use the resulting versions and modifications thereof;

e) to sell or distribute user technology, device or method permitting public access to and use of the user Interface of the System, to any person or entity; and

f) to exercise any and all such rights and licenses under this Agreement through the services of its employees, agents, independent CONTRACTORS or subcontractors, or such other persons or entities as it may employ or engage in its own discretion, and to disclose the Software and related documentation, in whole or in part, to such persons or entities for such purposes.

For the avoidance of doubt, nothing in this Agreement shall restrict or preclude the COMMISSION from providing to any other person or entity, or any such other person or entity from using, any of the Equipment, Software or other materials provided to the COMMISSION hereunder by the CONTRACTOR, in connection with the provision of any products or Services to or on behalf of the COMMISSION, or to any person or entity providing services to or on behalf of the COMMISSION.

Pre-existing CONTRACTOR software shall remain the property of the CONTRACTOR and nothing in this Agreement shall be construed to provide title to such software to the COMMISSION, subject to the License provided as set forth in Section 14.1 Description of License.

14.3 Establishing the Escrow

Upon execution of the Contract the parties shall enter into a Software Escrow Agreement, hereto attached, to the final Contract as Exhibit J. Prior to depositing the Software and related documentation into escrow, the CONTRACTOR shall submit the name of the Escrow Agent to the COMMISSION for its Approval. In the event that the Escrow Agent requires its own form of Escrow Agreement, the form of Escrow Agreement used by the Escrow Agent shall be subject to the prior written Approval of the COMMISSION and if not Approved by the COMMISSION then another Escrow Agent shall be selected. If the Escrow Agent's form of Escrow Agreement is Approved by the COMMISSION, said Escrow Agreement shall be used.

14.4 Deposits

Pursuant to the terms of the Escrow Agreement, the CONTRACTOR shall deposit with the Escrow Agent, without charge to the COMMISSION, all Deposit Materials (as hereinafter defined) necessary or useful to: (i) use, reproduce, modify, repair and maintain the Software; (ii) operate, modify, repair and Maintain the Equipment, and (iii) operate, use, modify, repair and maintain the System in accordance with this Agreement. Access to and rights in the materials in the escrow shall be governed by the terms and conditions hereof and as further defined in the Escrow Agreement.

Materials so deposited ("Deposit Materials") shall include but not be limited to: all Software programs (including all source and object code with respect thereto); configuration files; ICDs; operator's and user's manuals, and other associated documentation; reports; control files, utilities, and packages; operating systems; data base systems; network packages; Maintenance items (including test programs and program specifications); functional documentation, compilers, instructions for generating the Software, and any proprietary Software tools that are necessary in order to maintain the Software and other Equipment. A list of all deposit materials shall accompany the Deposit Materials.

CONTRACTOR shall deposit a complete set of Deposit Materials upon the Acceptance of the Implementation Phase and shall make updates no less frequently than quarterly or when major updates are made to Software pursuant to the following paragraph, whichever occurs first.

In the event the CONTRACTOR revises or supplements any of the Deposit Materials or creates additional materials related to the System, the CONTRACTOR shall deposit a complete set of such revised, supplemented, or additional Deposit Materials with the above named Escrow Agent within thirty (30) Calendar Days of such revision, supplement or addition and shall indicate with each deposit which documents and which pages have been revised, supplemented or added since the last deposit. Any deposits made pursuant to the two preceding sentences shall become part of the Deposit Materials.

The CONTRACTOR shall provide Notice to the COMMISSION confirming and describing the content of any deposits made within thirty (30) Calendar Days of such deposits, certifying that all such deposits are complete and include accurate copies of the required materials.

To the extent the Software includes components developed by third parties, the CONTRACTOR shall ensure that the Deposit Materials include copies of license agreements, computer programs, disks and documentation for all Software obtained by the CONTRACTOR from third parties. At the CONTRACTOR's expense, the CONTRACTOR shall ensure that all third party licenses are transferable to the COMMISSION at the time of any release of the escrow provided for hereunder.

14.5 Payment for Costs of Escrow

The CONTRACTOR shall be responsible for payment of all costs arising in connection with the establishment and maintenance of the escrow, referred to in this Section 14.5, throughout the Contract Term, including any fees of the Escrow Agent, and the COMMISSION shall not be charged by the

CONTRACTOR for its time in compiling and depositing Deposit Materials. The CONTRACTOR's obligation to maintain the escrow in place shall continue after the expiration or termination of the Contract Term until the CONTRACTOR receives Notice from the COMMISSION that the escrow is no longer required, pursuant to Section 14.7 Release of Escrow Deposits.

14.6 Verification of Escrow Deposits

From time to time while the escrow is in place, the COMMISSION may, at its sole discretion, verify directly or hire a firm qualified and mutually and reasonably acceptable to both parties, to provide verification of the applicable escrow deposits at the COMMISSION's expense, and to prepare a report. The agreement between the COMMISSION and such firm will include non-disclosure provisions deemed appropriate by the COMMISSION. Should any deficiencies or differences be noted between the System implemented under this Agreement and the applicable deposits delivered to the Escrow Agent, the COMMISSION shall provide Notice to the CONTRACTOR and shall provide the CONTRACTOR with a copy of the audit report. Within thirty (30) Calendar Days after its receipt of such notification and accompanying audit report, the CONTRACTOR shall deliver to the Escrow Agent for deposit the applicable Deposit Materials necessary to make the escrow deposits consistent with the System.

14.7 Release of Escrow Deposits

Except as may be otherwise provided in the Escrow Agreement, the Deposit Materials are to remain in Escrow unless or until withdrawal of such Deposit Materials is permitted in accordance with an Event of Default, pursuant to Section 21 of this Agreement, or upon end of the Contract, whether due to termination or expiration, at which time such Deposit Materials shall be provided to the COMMISSION subject to the limitations contained in the confidentiality provisions, and the terms of the Escrow Agreement, and shall be incorporated into the licenses granted to the COMMISSION hereunder.

In addition, effective upon any release of the Deposit Materials to the COMMISSION, the CONTRACTOR hereby grants to the COMMISSION and its designees a perpetual, irrevocable, universal, non-exclusive, fully-paid-up, royalty-free license to use, reproduce, adapt, modify, enhance and reverse engineer the source code form of the Software and all Deposit Materials for the purpose of supporting and maintaining the System, and for using, making, and having made derivatives of the Software and Deposit Materials in connection therewith. The license granted hereunder shall cover the full definition of Software, including components directly owned, developed or licensed by the CONTRACTOR, as well as components owned, developed or licensed by any CONTRACTOR affiliates, licensors, CONTRACTOR Parties, including third-party Software Suppliers.

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15 Work for Hire

Except for Hardware, third party licensed Software, and Software previously developed by CONTRACTOR, all Deliverables, including but not limited to source code, software, specifications, plans, designs and engineering, drawings, data, information or other written, recorded, photographic, or visual materials, trademarks, service marks, copyrights or other Deliverables produced by CONTRACTOR or any supplier in the performance of this Agreement shall be deemed "Work Product". All Work Product shall be considered Services for hire. Accordingly, except as set forth earlier in this paragraph, all Work Product shall be the exclusive property of the COMMISSION.

The CONTRACTOR agrees to notify the COMMISSION in writing before using any of CONTRACTOR's previously developed Software for services provided under this Agreement.

The CONTRACTOR and the COMMISSION will honor all applicable preexisting licenses, copyrights, trademarks, service marks, and patents. If as part of an expense item under this Agreement, the CONTRACTOR purchases the right to any license, the agreements for the use or ownership of such license will be placed in the name of the COMMISSION along with all other rights and obligations. In addition, the CONTRACTOR will mark all Turnpike content or previously unprotected work product designated by the COMMISSION with a notice as follows: "Pennsylvania Turnpike Commission, (Year)".

The COMMISSION also shall have all rights, title and interest in and to inventions, Software (such software not a part of the License Agreement), ideas, designs and methods developed by the CONTRACTOR and any Subcontractors specifically for the COMMISSION ("COMMISSION Owned Inventions"). Such COMMISSION Owned Inventions shall include all specifications and other documentation related thereto.

Upon the request of the COMMISSION, the CONTRACTOR shall promptly execute or shall cause its employees, agents, Subcontractors, or Suppliers to execute, in a form specified by the COMMISSION, a transfer of rights to all COMMISSION Owned Inventions and data and documentation in which the COMMISSION has ownership rights. The COMMISSION may, at its option, regard this as an assignment by the CONTRACTOR of any proprietary rights it may otherwise have in and to all such materials.

In addition, the CONTRACTOR agrees to give the COMMISSION and any person designated by the COMMISSION any and all assistance required to perfect the rights defined in subparagraph a. of this Section, including, but not limited to, execution and delivery of all documents required by the COMMISSION to document and protect the COMMISSION's proprietary rights in the COMMISSION Owned Inventions and data and documentation. Such assistance may also include filing applications for patent and copyright registration in the name of the COMMISSION and making all other necessary or appropriate filings with governmental entities so as to secure and maintain maximum protection for such COMMISSION Owned Inventions.

For such custom/developed software under this provision specifically for, or at the request or direction of, and paid for by the COMMISSION, the CONTRACTOR shall have worldwide, non-exclusive, royalty-free, perpetual license to use, modify, or sell for any legal business purposes, provided that the CONTRACTOR has credited the COMMISSION for the value of the retained license as reflected in the CONTRACTOR's invoice for the software.

16 Warranties

16.1 System Warranties

A full System warranty is required on all System Equipment, Hardware and Software for one (1) year beginning from the date of Acceptance by the COMMISSION. Notwithstanding the foregoing, all Servers provided under this Contract that are installed at the time of Acceptance shall have a warranty of not less than five (5) years from the date of Acceptance. During the System warranty period the COMMISSION shall not be charged for any Maintenance or Support Work performed on the System other than Work identified as excluded in **Exhibit A Scope of Work.** Such excluded Work shall include Work related to Force Majeure events or agreed-to out of scope work requested by the COMMISSION, pursuant to Section 13 Extra Work and Engineering Change Orders. Notwithstanding the foregoing, in the period after installation and prior to Acceptance, all Maintenance Work shall also be at CONTRACTOR's sole expense. Such replacement, whether pre-or post-Acceptance, shall include any unit of Equipment, Hardware or Software, or part or component thereof, which the COMMISSION deems defective or insufficient, or which the COMMISSION deems to have failed to comply with the Scope of Work. All fees associated with restocking cancelled or returned orders shall be the responsibility of the CONTRACTOR. All defective Equipment replaced by the CONTRACTOR shall become the property of the CONTRACTOR.

16.2 Equipment and Installation Warranties

All Equipment and Hardware installed on the System after the initial System warranty period shall have a warranty for a period of not less than one (1) year from the date of Approved installation against defective materials, workmanship, and failure to perform in accordance with required Contract performance criteria. Notwithstanding the foregoing, all Servers provided under this Contract shall have a warranty of not less than five (5) years. Replacement or repair of all materials found defective within the applicable warranty period shall be made without cost to the COMMISSION, including transportation if applicable. Such replacement shall include any unit of Equipment or Hardware or part or component thereof, which the COMMISSION deems defective or insufficient, or which the COMMISSION deems to have failed to comply with the Scope of Work. All fees associated with restocking cancelled or returned orders shall be the responsibility of the CONTRACTOR. All defective Equipment replaced by the CONTRACTOR will become the property of the CONTRACTOR.

The provisions of this Section shall survive the expiration, cancellation, or termination of this Agreement.

16.2.1 Software Warranties

a) The Software needed to operate the System shall be as set forth in **Exhibit A Scope of Work**. The COMMISSION's Acceptance of the Software shall occur in accordance with the provisions of **Exhibit A Scope of Work**. The CONTRACTOR warrants that the Software and each module or component and function thereof shall:

   i) be free from defects in materials and workmanship under normal use;

   ii) remain in good working order, be free from viruses; trap doors; disabling devices; Trojan horses; disabling codes; back doors; time bombs; drop-dead devices; worms, and any other type of malicious or damaging code or other technology or means which has the ability to interfere with the use of the System by the COMMISSION or its designees, or permit access to the COMMISSION's computing systems without its knowledge or contrary to its system connectivity policies or procedures;

   iii) not interfere with Electronic Toll Collection;

   iv) operate and function fully, properly and in conformity with the warranties in this Agreement, and

   v) meet the Requirements set forth in sub-paragraphs 2 through 13 of this Section.

b) The CONTRACTOR represents and warrants that upon the COMMISSION's Acceptance of and for the Contract term the Software will:

   i) operate fully and correctly in the operating environment identified in **Exhibit A Scope of Work**, including by means of the full and correct performance of the Software, and all updates, enhancements, or new releases of the Software, on or in connection with the Equipment, any updates, enhancements, or new releases to such Equipment, and any other Software used by or in connection with any such Equipment;

   ii) be fully compatible and Interface completely and effectively with the Equipment, including other Software programs provided to the COMMISSION hereunder, such that the Software and other Equipment combined will perform and continuously attain the standards identified in the Scope of Work, and

   iii) accurately direct the operation of the System, as required by the Scope of Work, and the descriptions, specifications and documentation set forth therein and herein.

c) During the term of the Contract the CONTRACTOR shall provide Services to Maintain the Software provided hereunder in good working order, keeping it free from defects such that the

System shall perform in accordance with this Agreement, the Scope of Work, and the warranties set forth herein.

i) The CONTRACTOR shall provide technical support and shall remedy any failure, malfunction, defect or non-conformity in Software, in accordance with the Scope of Work, but in any event not later than the deadline(s) in Exhibit A Scope of Work Section 7 Maintenance Maintenance and Software Services.

ii) The CONTRACTOR shall provide the COMMISSION the most current release of all Software available on the date of delivery to maintain optimum performance pursuant to this Agreement.

iii) The CONTRACTOR shall promptly provide Notice to the COMMISSION in writing of any defects or malfunctions in the Software provided hereunder, regardless of the source of information. The CONTRACTOR shall promptly correct all defects or malfunctions in the Software or documentation discovered and shall promptly provide the COMMISSION with corrected copies of same, without additional charge. If Software can only be corrected in conjunction with additional or revised Hardware, the CONTRACTOR shall provide such Hardware to the COMMISSION, and the cost of such Hardware shall be borne solely by the CONTRACTOR.

iv) No updates or enhancements shall adversely affect the performance of the System, in whole or in part, or result in any failure to meet any Requirements of the Scope of Work.

v)The CONTRACTOR shall ensure continued satisfactory performance by the current operating system of the Software in accordance with all provisions of this Section 16.2.1.

vi) The CONTRACTOR shall obtain Maintenance agreements for third-party Software. The CONTRACTOR shall secure such Maintenance agreements for the same duration and upon the same terms and conditions as the Maintenance provisions between the CONTRACTOR and the COMMISSION. All third party contracts and licenses shall be assignable to the COMMISSION.

vii) In the event that the Software does not satisfy the conditions of performance set forth in **Exhibit A Scope of Work**, the CONTRACTOR is obligated to promptly repair or replace such Software at the CONTRACTOR's sole cost and expense or, if expressly agreed to in writing by the COMMISSION, provide different Equipment or Software, and perform Services required to attain the performance Requirements set forth in the Scope of Work.

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viii) In the event of any defect in the media upon which any tangible portions of the Software is provided, the CONTRACTOR shall provide the COMMISSION with a new copy of the Software.

ix) Without releasing the CONTRACTOR from its obligations for warranty (during an applicable warranty period), support or Maintenance of the Software, the COMMISSION shall have the right to use and maintain versions of the Software provided by the CONTRACTOR which are one or more levels behind the most current version of such Software and to refuse to install any updates or enhancements if, in the COMMISSION's discretion, installation of such updates or enhancements would interfere with its Operations. The CONTRACTOR shall not, however, be responsible or liable for the effect of any error or defect in the version of the Software then in use by the COMMISSION that occurs after the CONTRACTOR has both (i) offered, by written notice to the COMMISSION, a suitable correction (by way of update, enhancement or otherwise) of such error or defect and (ii) provided the COMMISSION a reasonable opportunity to implement such existing correction, provided that the CONTRACTOR establishes that neither the implementation nor the use of such correction would limit, interfere with, adversely affect, or materially alter the interoperability, functionality or quality of the System.

x) All provisions of this Section 16.2.1, referring or relating to obligations to be performed pursuant to an applicable warranty period that extends beyond the term hereof, shall survive the expiration, cancellation, or termination of this Agreement.

16.2.2 Third-Party Warranties

In addition to the foregoing warranties, the CONTRACTOR shall assign to the COMMISSION, and the COMMISSION shall have the benefit of, any and all Subcontractors' and Suppliers' warranties and representations with respect to the System and Services provided hereunder. The CONTRACTOR's agreements with Subcontractors, Suppliers and any other third parties shall require that such parties (a) consent to the assignment of such warranties and representations to the COMMISSION, (b) agree to the enforcement of such warranties and representations by the COMMISSION in its own name, and (c) furnish to the COMMISSION, the warranties set forth herein. At the COMMISSION's request, the CONTRACTOR shall provide supporting documentation which confirms that these warranties are enforceable in the COMMISSION's name.

16.2.3 Services Warranties

The CONTRACTOR warrants that all Services shall be performed in a high-quality, professional

manner by qualified and skilled personnel in compliance with the COMMISSION's Requirements as set forth in **Exhibit A Scope of Work**. In the event the COMMISSION determines that any Services do not conform to the foregoing warranty, the COMMISSION shall be entitled to elect one of the following remedies: (i) reperformance of the Services by the CONTRACTOR until the COMMISSION deems them to be in conformity with the warranty in this Section 16.2.3, at no charge to the COMMISSION; (ii) refund from the CONTRACTOR for all fees paid in connection with the Services, which the COMMISSION deems were not as warranted, subject to the provisions of Section 24 Liquidated Damages such that the CONTRACTOR is not required to refund fees for non-provision of Services for which Liquidated Damages have been assessed, (iii) reimbursement by the CONTRACTOR for the COMMISSION's costs and expenses incurred in having the Services re-performed by the COMMISSION or someone other than the CONTRACTOR. Notwithstanding the foregoing, nothing in this Section 16.2.3 shall be construed to limit the COMMISSION's rights pursuant to Section 23 Remedies in the Event of Default.

16.2.4 Data Accuracy

The CONTRACTOR acknowledges and understands that the data and/or information it collects, processes and/or provides to the COMMISSION will be relied upon by to the COMMISSION and other persons or entities that are now or will in the future be under Agreement with the COMMISSION. Should information derived and provided by CONTRACTOR be inaccurate and cause the COMMISSION to incur damages or additional expenses, the COMMISSION shall notify CONTRACTOR and the CONTRACTOR shall immediately place any applicable insurance carrier on Notice of a potential claim. This provision shall survive termination of this Agreement, and the CONTRACTOR agrees to waive any applicable limitation periods consistent with enforcement of this provision.

16.2.5 Additional Warranties

The CONTRACTOR warrants the following:

a) All guarantees and warranties made herein are fully enforceable by the COMMISSION acting in its own name.

b) The Equipment and Systems the CONTRACTOR installs and places into operation will not result in any damage to existing facilities, walls or other parts of adjacent, abutting or overhead buildings, structures, surfaces, or any physical/mental damage to any individual utilizing any units(s) of Equipment.

c) All provided equipment is new and unused.

17 Pervasive Defects

The CONTRACTOR agrees to promptly remedy, at no cost to the COMMISSION, any defects determined by the COMMISSION to be Pervasive, such that if the COMMISSION determines that any Equipment, component, sub-component or Software is experiencing continued or repetitive failure that requires constant replacement or repair, the CONTRACTOR agrees that a "Pervasive Defect" shall be deemed to be present in such affected types of Equipment or Software. The CONTRACTOR shall then be required to investigate, develop and deploy, at no additional expense to the COMMISSION, all required component or System performance improvements to remediate this condition.

A resolution plan shall be produced by the CONTRACTOR and submitted to the COMMISSION within seven (7) days of notification of the Pervasive Defect. The plan shall include the investigation results, remediation steps performed to-date, and a plan and schedule to complete the Pervasive Defect resolution. The status shall be updated and briefed in weekly meetings until complete resolution.

The obligations set forth in this Section shall be in addition to any warranty obligations set forth in this Agreement. The provisions of this Section shall survive the expiration or earlier termination of this Agreement.

18 Unforeseen Circumstances

Except as otherwise provided in this Agreement, all loss or damage arising from any unforeseen obstruction or difficulties, whether natural or artificial, which may be encountered in the prosecution of the Work, or the furnishing of the supplies, materials or equipment, or from any action of the elements in the Implementation or Maintenance Phases, or of the supplies, materials or Equipment, or from any act or omission not authorized by the Agreement on the part of the CONTRACTOR or any agent or person employed by it, and which does not constitute a Force Majeure event shall be the responsibility of and be borne solely by CONTRACTOR.

19 Risk of Damage and Loss to Cashless Tolling System

CONTRACTOR shall bear all risk of damage or loss to the Cashless Tolling System , including all materials, Equipment and property required for the implementation of the Project, any System equipment located off-site for repair or any other reason (with the exception of materials, Equipment or property located at the COMMISSION's office or any other site the usage of which is exclusively controlled by the COMMISSION) except for damage and loss caused by the sole negligence or wrong-doing of the COMMISSION.

In the case of damage or loss that the COMMISSION agrees was caused by the sole negligence of the COMMISSION, CONTRACTOR shall promptly replace the damaged or lost portions of the System at CONTRACTOR's cost after such cost is pre-Approved by the COMMISSION, and submit the

amount(s) thus expended to the COMMISSION for reimbursement as a clearly identified, separate item on its next invoice to the COMMISSION.

20 Force Majeure

Either party is excused from performance hereunder if such non-performance results from acts of God, war, riots, acts of governmental authorities, or any other cause that could not have been reasonably anticipated and which could not be overcome by the exercise of due diligence or planning by the non-performing party. In the event of the occurrence of a Force Majeure event, the party unable to perform shall promptly notify the other party. It shall further pursue its best efforts to resume performance as quickly as possible and shall suspend performance only for such period of time as is necessary as a result of the Force Majeure event.

21 Event of Default

a) An Event of Default shall mean a material breach of this Agreement by the CONTRACTOR. Without limiting the generality of the foregoing and in addition to those instances referred to elsewhere in this Agreement as a breach, an Event of Default shall include the following:

   i) the CONTRACTOR failed to transmit and process transactions and data in accordance with this Agreement;

   ii) the CONTRACTOR materially inhibited the COMMISSION's collection of toll revenue;

   iii) the CONTRACTOR has not submitted acceptable Deliverables to the COMMISSION on a timely basis;

   iv) the Software/Equipment proves incapable of meeting the functional and/or performance Requirements set forth in **Exhibit A Scope of Work**;

   v) the CONTRACTOR refused or failed, except in cases for which an extension of time is provided, to supply enough properly skilled workers or proper materials to properly perform the Services required under this Agreement;

   vi) the CONTRACTOR failed to make prompt payment to Subcontractors or Suppliers for materials or labor;

   vii) the CONTRACTOR has become insolvent (other than as interdicted by the bankruptcy laws), or has assigned the proceeds received from this Agreement for the benefit of its creditors, or it has taken advantage of any insolvency statute or debtor/creditor law or if the CONTRACTOR's property or affairs have been put in the hands of a receiver;

   viii) any case, proceeding or other action against the CONTRACTOR is commenced in

bankruptcy, or seeking reorganization, liquidation or any relief under any bankruptcy, insolvency, reorganization, liquidation, dissolution or other similar act or law of any jurisdiction, which case, proceeding or other action remains undismissed, undischarged or unbonded for a period of thirty (30) Calendar Days;

ix) the CONTRACTOR fails to maintain insurance policies and coverages or fails to provide proof of insurance or copies of insurance policies as required by this Agreement;

x) any warranty, representation, certification, financial statement or other information made or furnished to induce the COMMISSION to enter into this Agreement, or made or furnished, at any time, in or pursuant to the terms of this Agreement or otherwise by the CONTRACTOR, or by any person who guarantees or who is liable for any obligation of the CONTRACTOR under this Agreement, shall prove to have been false or misleading in any material respect when made;

xi) any intentional violation by the CONTRACTOR of the ethics provisions, or applicable laws, rules or regulations;

xii) the CONTRACTOR has failed to obtain the Approval of the COMMISSION where required by this Agreement;

xiii) the CONTRACTOR has failed to provide "adequate assurances" as required under subsection (b) below;

xiv) the CONTRACTOR's Audited Financial Statements or those of its parent company submitted to the COMMISSION do not fairly represent the CONTRACTOR or its parent's true financial position;

xv) the CONTRACTOR has failed in the representation of any warranties stated herein;

xvi) the CONTRACTOR makes a statement to any representative of the COMMISSION indicating that the CONTRACTOR cannot or will not perform any one or more of its obligations under this Agreement;

xvii) the CONTRACTOR fails to remedy Pervasive Defects;

xviii) any act or omission of the CONTRACTOR or any other occurrence which makes it improbable at the time that the CONTRACTOR will be able to perform any one or more of its obligations under this Agreement;

xix) any suspension of or failure to proceed with any part of the Services by the CONTRACTOR which makes it improbable that the CONTRACTOR will be able to perform any one or more of its obligations under this Agreement;

xx) a pattern of repeated failures to meet the performance metric or metrics as defined in **Exhibit A Scope of Work**;

xxi) the suspension or revocation of any license, permit, or registration necessary for the performance of the CONTRACTOR's obligations under this Agreement; or

xxii) the default in the performance or observance of any of the CONTRACTOR's other obligations under this Agreement and the continuance thereof for a period of thirty (30) Calendar Days after Notice given to the CONTRACTOR by the COMMISSION.

b) Actions in Event of Default

When, in the opinion of the COMMISSION, reasonable grounds for uncertainty exist with respect to the CONTRACTOR's ability to perform the Services or any portion thereof, the COMMISSION may request that the CONTRACTOR, within the time frame set forth in the COMMISSION's request, provide adequate assurances to the COMMISSION, in writing, of the CONTRACTOR's ability to perform in accordance with terms of this Agreement. Until the COMMISSION receives such written assurances, the COMMISSION may suspend all payments to the CONTRACTOR. In the event that the CONTRACTOR fails to provide to the COMMISSION the requested assurances within the prescribed time frame, the COMMISSION may:

i) treat such failure as a repudiation of this Agreement;

ii) resort to any remedy for breach provided herein or at law or equity, including, but not limited to, taking over the performance of the Services or any part thereof either by itself or through others;

iii) remove all technical documentation deposited with the escrow agent (as defined in Section 14 License and Software) as set forth in the Escrow Agreement, with the purpose of competitively procuring any Equipment or Software or providing any Services based on such documentation;

iv) suspend the CONTRACTOR's performance hereunder, and

v) notify the surety and take other steps in accordance with the terms of the performance bond.

vi) The enumeration in this Section or elsewhere in this Agreement of specific rights or remedies of the COMMISSION shall not be deemed to limit any rights or remedies which the COMMISSION would have in the absence of such enumeration and no exercise by the COMMISSION of any right or remedy shall operate as a waiver of any other of the COMMISSION's rights or remedies not inconsistent therewith or to stop the COMMISSION from exercising such other rights or remedies.

22 Notice of Default/Chance to Cure and Termination

Without limiting the COMMISSION's rights under subparagraph (b) of this Section, the

COMMISSION may terminate this Agreement if, within a period of thirty (30) Calendar Days after the CONTRACTOR has received Notice from the COMMISSION that an Event of Default has occurred under subparagraph (a) of Section 21 Event of Default, the CONTRACTOR has not remedied such Event of Default or, if such event is one not reasonably curable within thirty (30) Calendar Days, the CONTRACTOR has not commenced and continued to pursue with due diligence a remedy for any such Event of Default and has not cured such Event of Default within ninety (90) Calendar Days of the Notice of Event of Default.

The COMMISSION may terminate this Agreement immediately without notice upon an Event of Default of the character described in subparagraphs 7 through 11, inclusive, of subparagraph (a) of Section 21, Event of Default.

23 Remedies in Event of Default

Upon the occurrence of an Event of Default, and at any time thereafter during the continuation of such Event of Default, the COMMISSION may exercise any right or remedy available to it in law or equity to enforce all rights under this Agreement, including any one or more of the following remedial steps:

a) Take any action at law or in equity to enforce performance and observance of any obligation, agreement or covenant of the CONTRACTOR under this Agreement.

b) Perform or cause to be performed for the account of the CONTRACTOR any covenant in the performance of which the CONTRACTOR is in default or make any payment for which the CONTRACTOR is in default. The CONTRACTOR shall pay to the COMMISSION upon demand any amount paid or incurred by the COMMISSION in the performance of such covenant. For any amounts which have been paid or incurred by reason of failure of the CONTRACTOR to comply with any covenant or provision of this Agreement, including reasonable counsel fees incurred in connection with prosecution or defense of any proceedings instituted by reason of default of the CONTRACTOR, such amounts shall bear interest at the Default Rate, which shall be defined as the Prime Rate, from the date of payment by the COMMISSION until paid by the CONTRACTOR and shall be secured by the financial assurance instruments described in Section 29 Surety Bonds. The Prime Rate shall be determined to be the Prime Rate of Interest published by the Wall Street Journal, or if the published rate is a range, shall be the highest of such range.

c) The COMMISSION, or its designated representatives, shall have the right to immediately take possession of all applicable Equipment and data, and the applicable facilities that house such items. The COMMISSION, as part of its right to complete or cause to be completed the Scope of Work, may: take possession of and use any or all of the materials, plants, tools, technical specifications, drawings, Equipment, supplies and property of every kind, provided, purchased, maintained, leased, owned, or rented by the CONTRACTOR, including but not limited to all

Deposit Materials, as defined in the Escrow Agreement, placed into escrow in accordance with the Agreement; make available any or all of the foregoing items; and/or procure other materials, plant, tools, Equipment, and supplies and may charge the CONTRACTOR, and the CONTRACTOR shall be liable to the COMMISSION for the expense of said labor, materials, plant, tools, Equipment, supplies and property. Such procurement shall in no event be deemed a breach by the COMMISSION of what might otherwise be its obligations under this Agreement. All leases and sub-leases of property, buildings and Equipment shall contain provisions that permit the COMMISSION to assume the CONTRACTOR's obligation and take control of the property, buildings or Equipment pursuant to the terms of this Agreement. The CONTRACTOR shall provide the COMMISSION with copies of such leases and sub-leases for Approval for the purposes of this sub-paragraph.

In addition to the foregoing, if an Event of Default occurs, or the CONTRACTOR threatens to commit an Event of Default, the COMMISSION shall have the right and remedy, without posting bond or other security, to have the provisions of this Agreement specifically enforced by any court having equity jurisdiction, it being acknowledged and agreed that any such Event of Default will cause irreparable injury to the COMMISSION and that money damages will not always provide an adequate remedy therefor.

This Section 23 shall survive termination, cancellation, or expiration of this Agreement.

24 Liquidated Damages and Performance Adjustments

24.1 Liquidated Damages for Delays in Completion of the Commissioning

Liquidated damages in the amount of up to $30,000 per Calendar Day shall be assessed for the CONTRACTOR's failure to complete Commissioning at locations on the Findlay Connector/Southern Beltway, in accordance with the Approved Project Schedule. Liquidated damages associated with future optional locations shall be determined at the time of development of associated Supplemental Agreements.

24.2 Lane Rental Fees in Maintenance and Implementation Phases

Lane Rental Fees shall be charged to the CONTRACTOR in the event that the CONTRACTOR fails to reopen a toll lane or lanes of traffic within the allowable lane closure time limits and the lanes remain closed during a time period in which a lane closure is not allowed. Allowable lane closure time limits will be defined as part of Approved lane closure plans with regard to daily, weekend and Holiday period closures for the CONTRACTOR's use and occupancy in order to perform Contract Work. During the allowable lane closure time limits, the COMMISSION will not assess Lane Rental Fees.

a) The chargeable Lane Rental Fee rate per hour per lane or any portion thereof is $1,600.00 for work within the Findlay Connector/Southern Beltway project area. Lane Rental Fees associated

with future optional locations shall be determined at the time of development of associated Supplemental Agreements.

b) Lane Rental Fees will be deducted from CONTRACTOR's next monthly invoice.

24.3 Performance Adjustments during Maintenance Phase

Payment reductions will be assessed not as a penalty, but as liquidated damages for not meeting the Maintenance Performance Standard Requirements set forth in Section 7.22 Performance Requirements for the Cashless Tolling System and Liquidated Damages of Exhibit A Scope of Work. If in the performance of the Services the CONTRACTOR does not meet or exceed the performance standards identified in Section 7.22 of Exhibit A Scope of Work, the COMMISSION shall reduce the amount it would otherwise pay to the CONTRACTOR for such Services subject to the reduction amounts and limits set forth in therein.

25 Actual Damages

The CONTRACTOR acknowledges that its performance is critical to the operation of the COMMISSION in so much as the Services to be provided pursuant to this Agreement directly involve the COMMISSION's revenue and customer service. The CONTRACTOR agrees that the actual damages set forth below are fair and reasonable and shall be incurred by the CONTRACTOR in the event of unsatisfactory performance:

The CONTRACTOR shall reimburse the COMMISSION for any revenue, which the COMMISSION identifies as having been lost due to the fault of the CONTRACTOR. Lost revenue includes, but is not limited to such events as lost transactions; lost images; lost data; revenue lost due to data security breach; transactions that are not able to be collected upon due to delays in processing; CONTRACTOR-caused delays in escalation or customer notifications that exceed statutory requirements, and transactions which are otherwise unable to be posted to customer accounts due to the fault of the CONTRACTOR.

The CONTRACTOR shall be responsible for any other costs incurred, which are the results of its improper handling of these Services, including such things as special mailings to customers to notify them of a mistake in their monthly statements due to transaction gathering and processing failures and inaccuracies.

The COMMISSION may choose, in its sole discretion, to recover such lost revenue from the CONTRACTOR by deducting such amounts from payments otherwise due and owing from the COMMISSION to the CONTRACTOR.

26 Limits on Liability

26.1 Limitation of Damages

26.a. In no event will the COMMISSION be liable to the CONTRACTOR for any loss of profits or anticipated revenues, loss of use of equipment or facilities, loss of labor, downtime costs, claims of customers, or other consequential or incidental damages resulting from any non-performance of obligations under this Agreement. Damages recoverable by CONTRACTOR hereunder will be limited to out-of-pocket costs actually paid by CONTRACTOR which are a direct and proximate result of a breach of legal duty by the COMMISSION. This limitation applies to any claim, whenever asserted by CONTRACTOR, and whether disputed in arbitration or judicial proceedings.

26.b. In no event will the CONTRACTOR be liable to the COMMISSION for any amounts in excess of five million dollars ($5,000,000.00), except amounts excluded from such limit by Section 26.c.1. hereof; provided, however, that this limitation of liability will not limit, in any manner, the rights of the COMMISSION, its Commissioners, officers, servants, agents and employees, as Additional Insureds under any policy of insurance issued to CONTRACTOR. Otherwise, this limitation applies to any claim, whenever asserted by the COMMISSION, and whether disputed in arbitration or judicial proceedings.

26.c. Except as limited by Section 26.b, CONTRACTOR shall be liable for any and all direct damages suffered or incurred by the COMMISSION as a result of any default by the CONTRACTOR in its obligations under this Agreement. However, in no event will the CONTRACTOR be liable for any other damages, including indirect, incidental, consequential, special or punitive damage of any kind in connection with or arising out of this Agreement, whether alleged as a breach of contract or tortious conduct, including negligence. Without limiting the generality of the foregoing, the CONTRACTOR shall not be liable for the loss of toll collection revenues or lost profits, unless directly resulting from the gross negligence or willful misconduct of the CONTRACTOR. The COMMISSION shall take commercially reasonable action to mitigate any direct damages, lost profits or lost toll collection revenues.

26.c.1 Except for the CONTRACTOR's liability for Special Obligations (as defined below) under no circumstances will the CONTRACTOR's liability for claims under this Agreement and the Software License, howsoever arising, exceed $5,000,000 minus any claims previously paid (excluding claims arising out of Special Obligations). $5,000,000 is the total cumulative liability of the CONTRACTOR for all claims under this Part 26.c.1 and the Software License, excluding claims arising out of Special Obligations. The parties acknowledge that the foregoing limitations were a material inducement to the CONTRACTOR to enter into this Agreement and represent an acceptable allocation of risk. This limitation on liability shall not apply to or limit the obligation or liability of the CONTRACTOR with respect to any of the following obligations ("Special Obligations"):

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26.c.1.1 the obligation of the CONTRACTOR (at its sole cost and expense) to correct any problem in the operation and performance of the Host System (as defined below), where such problems has resulted in a Total Failure of the Host System (as defined below),

26.c.1.2 the obligation of the CONTRACTOR to pay any liquidated damages specifically provided for under the terms of this Agreement.

26.c.1.3 any obligation of the CONTRACTOR under this Agreement or the Software License to indemnify the COMMISSION with respect to any infringement claims, and

26.c.1.4 any obligation of the CONTRACTOR to pay any damages directly resulting from the gross negligence or willful misconduct of the CONTRACTOR. In the event of a Total Failure of the Host System, the sole and exclusive remedies of the COMMISSION shall be to enforce the foregoing Special Obligations of the CONTRACTOR. Any amounts paid or incurred by the CONTRACTOR in connection with Special Obligations shall be excluded from the $5,000,000.00 limitation on liability set forth in this Section.

27 COMMISSION'S Purchase Rights

The COMMISSION reserves the right to purchase Equipment, Hardware and licenses directly from a third party supplier or original manufacturer.

28 Insurance

The CONTRACTOR, prior to execution of this Agreement, shall furnish to the COMMISSION the certificates of insurances as required in attached Exhibit H and made a part of this Agreement.

29 Surety Bonds

When awarded the Contract, Contractor shall furnish an electronic Performance Bond from one of the approved vendors, with sufficient surety or sureties, in an amount equal to 100% of the Contract Implementation Phase price. Have the bond specify that the contracted work will be completed in a manner satisfactory to the COMMISSION. Have the bond state that the COMMISSION is not liable for any expenses incurred through the failure to complete the work as specified, nor liable for any damages growing out of the carelessness of the Contractor, the Contractor's employees, or subcontractors. Also furnish an electronic Payment Bond from one of the approved vendors in the amount of 100% of the contract price. Have a corporate surety, legally authorized to transact business in the State and that have an A.M. Best's rating of no less than A-, with a financial size category of IX, or better, execute both bonds. If the COMMISSION decides the bond surety is unsatisfactory, promptly furnish any additional required security to protect the COMMISSION's interests and the interests of all persons, firms, or corporations who/which have furnished material, provided equipment on rental, or supplied/performed

labor or services on, or in connection with, the performance of the work for this contract. For a joint venture bid, an authorized general partner or corporate officer of the lead joint venture will be responsible for proper execution of the bonds.

Upon commencement of the Contract Maintenance Phase, Contractor shall furnish an electronic Performance Bond and a Payment Bond from one of the approved vendors, with sufficient surety or sureties, in an amount calculated as the sum of Year 1 maintenance as identified in the Contractor's Price Proposal. For each year thereafter the Maintenance Bond shall be equal to the sum of the gross invoice amounts (prior to any deductions for Non-Compliance Payments) for the previous twelve (12) months.

Performance bond coverage shall be continuous and shall be required on all open base or option project as a part of the Contract that have not yet been Approved or closed-out. Once a project has been Approved as complete and is closed out the bond value may be reduced by the dollar amount of the bond associated with the close-out.

30 Indemnification and Duty to Defend

The Proposer shall be responsible for, and shall indemnify, defend, and hold harmless the PTC and its Commissioners, officers, employees, and agents from any claim, liability, damages, losses, causes of action, and expenses, including reasonable attorneys' fees, arising from damage to life or bodily injury or real or tangible personal property caused by the negligence or other tortious acts, errors, and omissions of Proposer, its employees, or its subcontractors while engaged in performing the work of this Agreement or while present on the PTC's premises, and for breach of this Agreement regarding the use or nondisclosure of proprietary and confidential information where it is determined that Proposer is responsible for any use of such information not permitted by this Agreement. The indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or its subcontractors under Workmen's Compensation Acts, Disability Benefits Acts, or other Employee Benefit Act.

Further, for all intellectual property rights in effect at the time of contract signature, CONTRACTOR shall defend all suits and claims for infringement of any patent or other intellectual property rights and shall save and hold the COMMISSION, its agents, and assigns harmless from loss on account thereof resulting from the use by the COMMISSION or any of its employees or agents of equipment or intellectual property supplied under this Agreement. This patent infringement provision shall not apply to any infringement which has been established to be the result of or to have arisen solely out of the COMMISSION, its employees or agents modifying or altering any part or component, alone or in combination with any other part or component, except as consented to by CONTRACTOR.

31 Diverse Business (DB) Requirements

The CONTRACTOR agrees to comply with the requirements set forth in the COMMISSION'S DB Requirements - Exhibit I, attached and made part of this Agreement. In particular, the CONTRACTOR agrees to comply with section (d) Consultant Requirements During Performance of Services.

32 Assignment and Delegation

The CONTRACTOR may not transfer, assign, or delegate any terms of this Agreement, in whole or in part, without prior written permission from the COMMISSION.

33 Benefit

Subject to the provisions hereof with respect to assignment, this Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and permitted assigns.

34 Governing Law

This Agreement will be interpreted according to the laws of the Commonwealth of Pennsylvania.

35 Independent CONTRACTOR

The CONTRACTOR is and shall be, in all respects, an independent CONTRACTOR in performing Services pursuant to the Agreement. In accordance with its status as an independent CONTRACTOR, the CONTRACTOR shall covenant and agree that neither it nor its agents and/or employees will hold itself or themselves out as or claim to be an officer or employee of the COMMISSION, and that neither the CONTRACTOR nor its agents and employees shall make any claim, demand or application to or for any right or privilege applicable to an officer or employee of the COMMISSION, including, but not limited to Workers' Compensation coverage, Unemployment Insurance benefits, Social Security coverage or Retirement System membership or credit.

36 No Third Party Beneficiary

Nothing in this Agreement shall act to confer third party beneficiary rights. Nothing in this Agreement shall create any obligation on the part of the COMMISSION to any third party.

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37 Language

If any words and descriptions used in this Agreement are defined pursuant to Exhibit B Defined Terms and Acronyms, they shall have the meaning prescribed therein, except when it is clear from the context that another meaning is intended.

As used in this Agreement, unless the express terms or context herein clearly otherwise require:

a) Terms referred to in the singular shall include the plural (and vice versa);

b) References to Articles, Sections and Chapters are to articles, sections and chapters of this Agreement;

c) References to Appendices, Attachments, Exhibits and Schedules or appendices, attachments, exhibits and schedules hereto, all of which will be incorporated and made a part of this Agreement;

d) Captions and headings are used for convenience of reference only and shall not be construed to modify the meaning of the terms and conditions of this Agreement;

e) References to any law or regulation shall be construed as including all statutory and regulatory provisions amending, replacing, supplementing or interpreting such law or regulation, and any corresponding provisions of successor laws or regulations;

f) References to agreements and contracts shall include any amendments and supplements thereto duly executed from time to time;

g) "Including" is used in the inclusive sense of "including, without limitation";

h) "Or" is used in the inclusive sense of "and/or";

i) "Any" is used in the inclusive sense of "any and/or all";

j) "Herein," "hereof", "hereunder" and words of similar effect shall refer to the entirety of this Agreement; and

k) In computing any period of time fixed by the terms of this Agreement, the day of the act or event from which the designated period begins to run is not to be included, but the last day of the period so computed is to be included.

The language of all provisions of this Agreement shall be construed according to its fair meaning and not strictly against any party.

38 Survival of Terms

In addition to those Sections noted in this Agreement as surviving the termination, cancellation, or expiration of this Agreement, the terms of this Agreement, the CONTRACTOR's obligations and the obligations of the COMMISSION under this Agreement, which by their nature would reasonably be

understood to continue beyond the termination, cancellation, or expiration hereof, shall survive termination, cancellation, or expiration hereof.

39 Notices

All notices, requests, demands and other communications required or permitted hereunder, other than with respect to daily operations and Maintenance, shall be in writing and shall be deemed to have been duly given (a) if delivered by hand or nationally recognized overnight delivery service, when delivered; (b) if by facsimile, on the first Business Day when received, or (c) if by mail, five (5) Business Days after being mailed, certified or registered mail, with postage prepaid as follows:

a) If to the COMMISSION, to the address and to the attention indicated on the execution page of this Agreement.

b) If to the CONTRACTOR, to the address and to the attention set forth on the execution page of this Agreement.

Any party may change such addresses by providing a Notice in accordance with this Section

40 Audit/Retention of Records

CONTRACTOR and its subcontractors shall maintain books and records related to performance of this Agreement or subcontract and necessary to support amounts charged to the COMMISSION in accordance with applicable law, terms and conditions of this Agreement, and generally accepted accounting practice. CONTRACTOR shall maintain these books and records in accordance with the latest applicable version of the PTC Records Management Manual and Records Retention Schedule. All books and records shall be available for review or audit by the COMMISSION, its representatives, and other governmental entities with monitoring authority upon reasonable notice and during normal business hours. CONTRACTOR agrees to cooperate fully with any such review or audit. If any audit indicates overpayment to CONTRACTOR, or subcontractor, the COMMISSION shall adjust future or final payments otherwise due. If no payments are due and owing to CONTRACTOR, or if the overpayment exceeds the amount otherwise due, CONTRACTOR shall immediately refund all amounts which may be due to the COMMISSION. Failure to maintain the books and records required by this Section shall establish a presumption in favor of the COMMISSION for the recovery of any funds paid by the COMMISSION under this Agreement for which adequate books and records are not available to support the purported disbursement.

41 Dispute Resolution

All questions or disputes regarding any matter involving this Agreement or its breach shall be

referred to the Board of Claims of the Commonwealth of Pennsylvania pursuant to 62 Pa.C.S.A. § 1701 et seq.

To resolve disputes early in the process, before filing a claim under § 1701 et seq., the CONTRACTOR's Project Manager shall submit notice of intent to claim to the COMMISSION's Project Manager, in writing, within 10 days of the act or omission. This notice of intent will give the COMMISSION the opportunity to investigate the claim and to maintain and document information for future resolution or litigation of the claim. The CONTRACTOR's Project Manager and the COMMISSION's Project Manager shall attempt to resolve all disputes. If a dispute cannot be resolved between these project managers, the dispute will be referred to the CONTRACTOR's Project Principal and the COMMISSION's Project Principal for resolution.

Ultimately under 62 Pa.C.S.A. § 1701 et seq. and specifically § 1712.1, CONTRACTOR must file the claim in writing with the COMMISSION's Contracting Officer within 6 months of the date it accrues and not thereafter. If the CONTRACTOR fails to file the claim or does not timely file the claim, the CONTRACTOR is deemed to have waived its right to assert the claim in any forum. Claims not filed within the specified time period will be disregarded by the Contracting Officer. The claim, when filed, must state all grounds upon which the claim is based and must include a copy of the previously submitted notice of intent to claim.

The Contracting Officer will attempt to settle and resolve the claim with the CONTRACTOR. The Contracting Officer, at his or her discretion, may conduct a claim review meeting to attempt to settle and resolve the claim with the CONTRACTOR. If a claim review meeting is held, it will be attended by representatives of the CONTRACTOR and such COMMISSION representatives as the Contracting Officer considers appropriate.

If the claim is not resolved by agreement between the Contracting Officer and the CONTRACTOR, the Contracting Officer will issue a determination in writing, regarding the claim and will mail it to the CONTRACTOR by first class mail. The determination will be mailed within 120 days of the date on which the Contracting Officer received the claim, unless the 120 day period is extended by consent of the Contracting Officer and the CONTRACTOR. If the Contracting Officer fails to issue a final determination within the 120 days, unless extended by consent of the Contracting Officer and the CONTRACTOR, the claim will be deemed denied. The determination of the Contracting Officer will be the final order of the COMMISSION regarding the claim. The determination of the Contracting Officer will be conclusive and binding upon the CONTRACTOR unless the CONTRACTOR appeals the determination by filing a statement of claim with the Board of Claims within 15 days of the mailing date of the determination, or, if no extension is agreed to by the Contracting Officer and the CONTRACTOR, within 135 days of the receipt by the Contracting Officer of the claim, whichever occurs first.

If the Board of Claims either refuses or lacks jurisdiction, these questions or disputes shall proceed as provided in 42 Pa.C.S.A. § 7301 et seq. (Statutory Arbitration). The panel of arbitrators will

consist of a representative of each of the parties and a third party chosen by the representatives, or if the representatives are unable to choose, by the American Arbitration Association.

42 CONTRACTOR Integrity Provisions

It is essential that those who seek to contract with the COMMISSION observe high standards of honesty and integrity. They must conduct themselves in a manner that fosters public confidence in the integrity of the COMMISSION contracting and procurement process.

I. **DEFINITIONS.** For purposes of these CONTRACTOR Integrity Provisions, the following terms shall have the meanings found in this Section:

a. **"Affiliate"** means two or more entities where (a) a parent entity owns more than fifty percent of the voting stock of each of the entities; or (b) a common shareholder or group of shareholders owns more than fifty percent of the voting stock of each of the entities; or (c) the entities have a common proprietor or general partner.

b. **"Consent"** means written permission signed by a duly authorized officer or employee of the COMMISSION, provided that where the material facts have been disclosed, in writing, by prequalification, bid, proposal, or contractual terms, the COMMISSION shall be deemed to have consented by virtue of the execution of this contract.

c. **"Contractor"** means the individual or entity, that has entered into this contract with the COMMISSION, and "Contractor Related Parties" means any affiliates of the Contractor and the Contractor's executive officers, Pennsylvania officers and directors, or owners of 5% or more interest in the Contractor

d. **"Financial Interest"** means either:

i. Ownership of more than a five percent interest in any business; or

ii. Holding a position as an officer, director, trustee, partner, employee, or holding any position of management.

e. **"Gratuity"** means tendering, giving, or providing anything of monetary value including, but not limited to, cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind. See Commission Policy 3.10, Code of Conduct.

f. **"Non-bid Basis"** means a contract awarded or executed by the COMMISSION with Contractor without seeking bids or proposals from any other potential bidder or offeror.

II. In furtherance of this policy, Contractor agrees to the following:

1. Contractor shall maintain the highest standards of honesty and integrity during the performance of this contract and shall take no action in violation of state or federal laws or regulations or any other applicable laws or regulations, or other requirements applicable to Contractor or that govern contracting or procurement with the COMMISSION.

2. Contractor shall establish and implement a written business integrity policy, which includes, at a minimum, the requirements of these provisions as they relate to Contractor activity with the COMMISSION and COMMISSION employees and which is made known to all Contractor employees. Posting these Contractor Integrity Provisions conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the contract services are performed shall satisfy this requirement.

3. Contractor, its affiliates, agents, employees and anyone in privity with Contractor shall not accept, agree to give, offer, confer, or agree to confer or promise to confer, directly or indirectly, any gratuity or pecuniary benefit to any person, or to influence or attempt to influence any person in violation of the Public Official and Employees Ethics Act, 65 Pa.C.S. §§1101 et seq.; the State Adverse Interest Act, 71 P.S. §776.1 et seq.; Commission Policy 3.10, Code of Conduct or in violation of any other federal or state law in connection with performance of work under this contract, except as provided in this contract.

4. Contractor shall not have a financial interest in any other contractor, subcontractor, or supplier providing services, labor, or material under this contract, unless the financial interest is disclosed to the COMMISSION in writing and the COMMISSION consents to Contractor's financial interest prior to COMMISSION execution of the contract. Contractor shall disclose the financial interest to the COMMISSION at the time of bid or proposal submission, or if no bids or proposals are solicited, no later than Contractor's submission of the contract signed by Contractor.

5. Contractor certifies to the best of its knowledge and belief that within the last five (5) years Contractor or Contractor Related Entities have not:

   a. been indicted or convicted of a crime involving moral turpitude or business honesty or integrity in any jurisdiction;

   b. been suspended, debarred or otherwise disqualified from entering into any contract with any governmental agency;

   c. had any business license or professional license suspended or revoked;

   d. had any sanction or finding of fact imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust; and

e. been, and is not currently, the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or civil anti-trust investigation by any federal, state or local prosecuting or investigative agency.

If Contractor cannot so certify to the above, then it must submit along with its bid, proposal or contract a written explanation of why such certification cannot be made and the COMMISSION will determine whether a contract may be entered into with the Contractor. The Contractor's obligation pursuant to this certification is ongoing from and after the effective date of the contract through the termination date thereof. Accordingly, the Contractor shall have an obligation to immediately notify the COMMISSION in writing if at any time during the term of the contract if becomes aware of any event which would cause the Contractor's certification or explanation to change. Contractor acknowledges that the COMMISSION may, in its sole discretion, terminate the contract for cause if it learns that any of the certifications made herein are currently false due to intervening factual circumstances or were false or should have been known to be false when entering into the contract.

6. Contractor shall comply with the requirements of the Lobbying Disclosure Act (65 Pa.C.S. §13A01 et seq.) regardless of the method of award. If this contract was awarded on a Non-bid Basis, Contractor must also comply with the requirements of the Section 1641 of the Pennsylvania Election Code (25 P.S. §3260a).

7. When Contractor has reason to believe that any breach of ethical standards as set forth in law, Commission Policy 3.10, Code of Conduct, or these Contractor Integrity Provisions has occurred or may occur, including but not limited to contact by a COMMISSION officer or employee which, if acted upon, would violate such ethical standards, Contractor shall immediately notify the COMMISSION contracting officer or the Chief Compliance Officer in writing.

8. Contractor, by submission of its bid or proposal and/or execution of this contract and by the submission of any bills, invoices or requests for payment pursuant to the contract, certifies and represents that it has not violated any of these Contractor Integrity Provisions in connection with the submission of the bid or proposal, during any contract negotiations or during the term of the contract, to include any extensions thereof. Contractor shall immediately notify the COMMISSION in writing of any actions for occurrences that would result in a violation of these Contractor Integrity Provisions. Contractor agrees to reimburse the COMMISSION for the reasonable costs of investigation incurred by the Chief Compliance Officer for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the COMMISSION that results in the suspension or debarment of the Contractor. Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.

9. Contractor shall cooperate with the Chief Compliance Officer in investigating any alleged

COMMISSION agency or employee breach of ethical standards and any alleged Contractor non-compliance with these Contractor Integrity Provisions. Contractor agrees to make identified Contractor employees available for interviews at reasonable times and places. Contractor, upon the inquiry or request of the Chief Compliance Officer, shall provide, or if appropriate, make promptly available for inspection or copying, any information of any type or form deemed relevant by the Chief Compliance Officer to Contractor's integrity and compliance with these provisions. Such information may include, but shall not be limited to, Contractor's business or financial records, documents or files of any type or form that refer to or concern this contract. Contractor shall incorporate this paragraph in any agreement, contract or subcontract it enters into in the course of the performance of this contract/agreement solely for the purpose of obtaining subcontractor compliance with this provision. The incorporation of this provision in a subcontract shall not create privity of contract between the COMMISSION and any such subcontractor, and no third party beneficiaries shall be created thereby.

10. For violation of any of these Contractor Integrity Provisions, the COMMISSION may terminate this and any other contract with Contractor, claim liquidated damages in an amount equal to the value of anything received in breach of these Provisions, claim damages for all additional costs and expenses incurred in obtaining another contractor to complete performance under this contract, and debar and suspend Contractor from doing business with the Commonwealth. These rights and remedies are cumulative, and the use or non-use of any one shall not preclude the use of all or any other. These rights and remedies are in addition to those the COMMISSION may have under law, statute, regulation, or otherwise.

43 Confidentiality Provisions

As a consequence of the performance of its duties with the COMMISSION, CONTRACTOR may learn, be given, or become aware of certain information, including, but not limited to, matters pertaining to internal communications, information, proprietary information, individually identifiable health information, trade practices, business operations, or other sensitive information collectively known as Confidential Information. Regardless of how transmitted or received by CONTRACTOR, whether by receipt, sending, or merely becoming available to CONTRACTOR through its relationship to the COMMISSION, CONTRACTOR agrees to maintain and treat as proprietary and confidential to the COMMISSION all such Commission Confidential Information, and shall not discuss, reveal, or use for any purpose outside the performance of its contract with the COMMISSION such Commission Confidential Information. Confidential Information shall not include any information that (i) is or becomes available to the public other than as a consequence of a breach by any individual, a partnership, a corporation, an association, a limited liability company, a joint stock company, a trust, a joint venture, an unincorporated organization (each a "Person") of any fiduciary duty or obligation of confidentiality, including, without limitation, catalogues, publications, product descriptions and sales literature that the COMMISSION has distributed to

the public generally; or (ii) information which at the time of disclosure to the CONTRACTOR is in the public domain; or (iii) is disclosed as required by a final, unappealable court order and no suitable protective order, or equivalent remedy, is available, or (iv) the CONTRACTOR was aware of prior to its disclosure to the CONTRACTOR by the COMMISSION from a source not bound by a confidential obligation and the CONTRACTOR provides the COMMISSION written notice of such fact prior to the execution of this Agreement or promptly upon the CONTRACTOR's learning that the information was Confidential Information; or (v) information which the CONTRACTOR can demonstrate with competent written evidence was independently developed by or for the CONTRACTOR without use of or reliance on the Confidential Information.

With respect to its employees, CONTRACTOR agrees

a) to require all of its employees to maintain confidentiality;

b) to prosecute its employees, officers, and subcontractors for any and all violations of this Agreement;

c) to keep such agreements in full force and effect;

d) to obtain from the COMMISSION its approval, which shall not be unreasonably withheld, of the terms of such agreements; and

e) to permit the COMMISSION to inspect such agreements and other documents for compliance with these requirements.

With respect to any subcontractors that CONTRACTOR wishes to employ to perform any of its obligations under any agreement with the COMMISSION, CONTRACTOR agrees to require any such approved subcontractor to execute written confidentiality agreements that require each such CONTRACTOR and its employees to comply with all the requirements set forth above.

CONTRACTOR agrees that any breach of these Confidentiality Provisions may result in civil and/or criminal penalties, for CONTRACTOR, its officers and employees, and subcontractors.

Notwithstanding any other provision to the contrary, CONTRACTOR agrees that these provisions shall survive the termination of this and any and all agreements between the CONTRACTOR and the COMMISSION.

CONTRACTOR agrees to treat the information in the same way CONTRACTOR treats its own most confidential information and to inform each such person of these provisions.

CONTRACTOR agrees to immediately notify the COMMISSION of any information which comes to its attention which does or might indicate that there has been any loss of confidentiality or information.

CONTRACTOR shall return to the COMMISSION upon demand any and all Confidential Information entrusted to it by the COMMISSION pursuant to this Agreement (including any and all copies, abstracts, compilations or analyses thereof and memoranda related thereto or

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incorporating the Confidential Information) or the CONTRACTOR may request permission from the COMMISSION, which permission may be granted or denied in the COMMISSION's sole discretion, to destroy all such Confidential Information and provide a certificate of destruction to the COMMISSION signed by the CONTRACTOR. The CONTRACTOR further agrees that neither itself nor its employees or representatives will copy, in whole or in part, any such Confidential Information without the prior written consent of the COMMISSION.

CONTRACTOR agrees that if they have had or will have an SSAE16 audit that they will comply with and abide by the findings of such audit to protect COMMISSION information.

44 Entire Agreement

This Agreement, together with any writings either attached as exhibits or incorporated by reference, constitutes the entire understanding between the parties and there are no other oral or extrinsic understandings of any kind between the parties.

45 Modification

This Agreement may be modified only by a writing signed by both parties.

(SIGNATURES ARE SET FORTH ON THE NEXT PAGE)

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IN WITNESS WHEREOF, the **Pennsylvania Turnpike Commission** and **[Contractor's Name]** have executed this Agreement by their duly authorized officers on the date written above.

ATTEST: PENNSYLVANIA TURNPIKE COMMISSION

_____	_____	_____	_____
Ann Louise Edmunds	Date	Sean Logan	Date
Assistant Secretary-Treasurer		Chairman	

APPROVED AS TO FORM AND LEGALITY:

_____	_____	_____	_____
Albert C. Peters II	Date	Pennsylvania Attorney General	Date
General Litigation & Contracts Counsel			

ATTEST: **[CONTRACTOR'S NAME]**

Signature_____	_____	Signature_____	_____
	Date		Date
Name_____		Name_____	
Title_____		Title_____	

Federal Tax ID No._____

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Exhibit H
Insurance Requirements

Prior to the commencement of any work and until completion and final payment is made for the work / final acceptance of the work, the Contractor will provide and maintain the following minimum levels of insurance at Contractor's own expense. The cost of the required insurance shall be included in the Contractor's bid price and no adjustment shall be made to the contract price on account of such costs unless such approval is provided. The term Contractor shall include Subcontractors and Sub-Subcontractors of every tier. Contractor shall furnish Certificates of Insurance evidencing and reflecting the effective date of coverage as outlined below. In no event shall Work be performed until the required evidence of Insurance is provided in accordance with these Contract Documents and is approved by the Pennsylvania Turnpike Commission (the "Commission"). If found to be non-compliant, the Commission may purchase the required insurance coverage(s) and the cost will be borne by the Contractor through direct payment/reimbursement to the Commission or the Commission may withhold payment to the Contractor for amounts owed to them.

a) All insurance shall be procured from insurers permitted to do business in the State in which the project is taking place and having an A.M. Best Rating of at least "A-, Class VIII".

b) Contractor shall not have a Self-Insured Retention (SIR) on any policy greater than $25,000, which is the responsibility of the Contractor. If Contractor's policy(ies) has a Self- Insured Retention exceeding this amount, approval must be received from the Commission prior to starting work. In the event any policy includes an SIR, the Contractor is responsible for payment within the SIR of their policy(ies) and the Additional Insured requirements specified herein shall be offered within the SIR amount(s).

c) All insurance required herein, with the exception of the Professional Liability Insurance, shall be written on an "occurrence" basis. Claims-Made coverage must include:

    i. The retroactive date must be on or prior to the start of work under this contract; and
    ii. The Contractor must purchase "tail coverage/an extended reporting period" or maintain coverage for a period of three years, subsequent to the completion of their work / final payment.

d) The Contractor's insurance carrier (s) shall agree to provide at least thirty (30) days prior written notice to the Commission in the event coverage is canceled or non-renewed. In the event of cancellation or non-renewal of coverage(s), it is the Contractor's responsibility to replace coverage to comply with the Contract requirements so there is no lapse of coverage for any time period.

    In the event the insurance carriers will not issue or endorse their policy(s) to comply with the above it is the responsibility of the Contractor to report any notice of cancellation or non-renewal at least thirty (30) days prior to the effective date of this notice.

e) Contractor shall provide the Commission with Certificates of Insurance, evidencing the insurance coverages listed below, ten days prior to the start of work of this Project and thereafter upon renewal or replacement of each coverage. The Contractor shall not begin any work until the Commission has reviewed and approved the Certificate of Insurance.

Failure of the Commission to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the Commission to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

With respect to insurance maintained after final payment in compliance with a requirement below, an additional certificate(s) evidencing such coverage shall be provided to the Commission with final application for payment and thereafter upon renewal or replacement of such insurance until the expiration of the time period for which such insurance must be maintained.

f) The Commission, (including the Commission's Parent, Subsidiaries, and Affiliates) shall be added as ADDITIONAL INSUREDS on all liability policies (except Workers' Compensation and Professional Liability Policy, where applicable), for ongoing operations and completed operations on a primary noncontributory basis. Coverage to include ongoing and completed operations using ISO Endorsements CG 2010 and CG 2037, or their equivalents. Each of the Additional Insured's respective members, employees, agents and representatives shall also be afforded coverage as an Additional Insured. Coverage should be provided for a period of three years subsequent to the completion of work/final payment.

If you are operating in a state that has implemented the "Anti-Indemnity" Additional Insured Endorsements, you are required to provide the state specific additional insured endorsements for ongoing and completed operations. These states include but are not limited to: Montana, New Mexico, Oregon, Colorado, Kansas, California, Louisiana, and Texas.

The Commission reserves the right to require Contractor to name other parties as additional insureds as required by the Commission.

There shall be no "Insured versus Insured Exclusion" on any policies, excluding Professional Liability; all policies will provide for "cross liability coverage," excluding Professional Liability.

g) Waiver of Rights of Subrogation: Contractor shall waive all rights of recovery against the Commission and all the additional insureds for loss or damage covered by any of the insurance maintained by the Contractor.

h) The amount of insurance provided in the aforementioned insurance coverages, shall not be construed to be a limitation of the liability on the part of the Contractor.

i) The carrying of insurance described shall in no way be interpreted as relieving the Contractor of any responsibility or liability under the contract.

j) Any type of insurance or any increase in limits of liability not described above which the Contractor requires for its own protection or on account of statute shall be its own responsibility and at its own expense.

k) Contractor shall promptly notify the Commission and the appropriate insurance company(ies) in writing of any accident(s) as well as any claim, suit or process received by the insured Contractor arising in the course of operations under the contract. The Contractor shall forward such documents received to his insurance company(ies), as soon as practicable, or as required by its insurance policy(ies).

REQUIRED COVERAGE - the following may be provided through a combination of primary and excess policies in order to meet the minimum limits set forth below:

1. **Workers' Compensation and Employer's Liability:**

   Provided in the State in which the work is to be performed and elsewhere as may be required and shall include:

   a) Workers' Compensation Coverage: Statutory Requirements

   b) Employers Liability Limits not less than:

Bodily Injury by Accident:	$500,000 Each Accident
Bodily Injury by Disease:	$500,000 Each Employee
Bodily Injury by Disease:	$500,000 Policy Limit

   c) USL&H, and FELA Coverage, if applicable.

   d) Includes sole proprietorships and officers of corporation who will be performing the work.

   e) Where applicable, if the Contractor is lending or leasing its employees to the Commission for the work under this contract (e.g. crane rental with operator), it is the Contractor's responsibility to provide the Workers Compensation and Employer's Liability coverage and to have their policy endorsed with the proper Alternate Employer Endorsement.

2. **Commercial General Liability:**

   Provided on ISO form CG 00 01 12 07 or an equivalent form including Premises - Operations, Independent Contractors, Products/Completed Operations, Broad Form Property Damage, Contractual Liability, and Personal Injury and Advertising Injury.

   a) Occurrence Form with the following limits:

(1)	General Aggregate:	$2,000,000
(2)	Products/Completed Operations Aggregate:	$2,000,000
(3)	Each Occurrence:	$1,000,000
(4)	Personal and Advertising Injury:	$1,000,000

b) Products/Completed Operations Coverage must be maintained for a period of at least three (3) years after final payment / completion of work (including coverage for the Additional Insureds as set forth in these Insurance Requirements).

c) No Exclusions for development, construction, building conversion, etc with respect to the project's location and / or where the work is to be completed by the Contractor.

d) Coverage for "Resulting Damage".

e) No sexual abuse or molestation exclusion.

f) No amendment to the definition of an "Insured Contract" except as noted below.

g) If applicable, the definition of an "Insured Contract" must be amended to provide coverage for all work on or within 50 feet of a railroad. A stand alone Railroad Protective Liability policy may be required based on the scope of this project.

3. **Automobile Liability:**

a) Coverage to include All Owned, Hired and Non-Owned Vehicles (or "Any Auto"), if you do not have any Owned Vehicles you are still required to maintain coverage for Hired and Non-Owned Vehicles as either a stand alone policy or endorsed onto the Commercial General Liability policy above

b) Per Accident Combined Single Limit $1,000,000

4. **Commercial Umbrella Liability:**

a) Policy(ies) to apply on a Following Form Basis of the following:
(1) Commercial General Liability,
(2) Automobile Liability, and
(3) Employers Liability Coverage.

b) Minimum Limits of Liability
Occurrence Limit: $5,000,000
Aggregate Limit (where applicable): $5,000,000

5. **Technology Errors and Omissions Insurance:**

a) Contractor shall procure and maintain Technology Errors and Omissions insurance with a limit of no less than $10,000,000.

b) The Definition of "Covered Services" shall include the services required in the scope of this contract. These services include but are not limited to the following: design, consulting, data processing, programming, system integration, software development, installation, distribution or maintenance, systems analysis or design, training staffing or other support services, any electronic equipment, computer hardware or software developed, manufactured, distributed, licensed, marketed or sold.

c) If the policy is issued on a claims-made form, the Contractor shall provide annual certificates of insurance for three (3) years after Work is completed as evidence that coverage has been extended.

6. **Cyber/Privacy Liability:**

a) Contractor shall maintain coverage for third party liability arising out of breach of privacy, inclusive of confidential and proprietary business information, HIPAA violations and other breaches of personally identifiable information and/or protected health information that may arise from their work with this contract.

b) Minimum Limits of Liability:

Per Claim:	$10,000,000
Aggregate:	$10,000,000

c) Privacy Breach Notification and Credit Monitoring: $5,000,000 Per Occurrence

7. **Crime Insurance:**

a) Include the Employee Theft and Theft, Disappearance and Destruction coverage parts.

b) The Employee Theft Coverage part shall include the Clients' Property Endorsement (ISO Form CR 04 01, or its equivalent).

c) Coverage may be provided in the form of a Financial Institution Bond.

d) Minimum Limits of Liability:

Per Occurrence:	$1,000,000

8. **Property Coverage:**

a) Contractor shall provide coverage for damage to their work, materials to be part of the project (on-site and off-site), and in transit.

b) Contractor shall maintain Property Coverage for their owned, leased, rented or borrowed equipment, tools, trailers, etc. for the full replacement cost of the equipment

c) Coverage to be provided on an All Risk, Agreed Amount Basis with no Coinsurance

d) Valuable Papers coverage is to be included with a minimum $500,000 Limit.

9. **Installation Floater:**

   a) Contractor shall provide coverage for damage to property in the course of installation or transit to the installation site.

   b) Coverage shall be equal to the full replacement cost of the equipment or materials being installed. Coverage shall also be provided for any ensuing loss of Business or Rental Income.

Exhibit I
Diverse Business (DB) Requirements

Pennsylvania Turnpike Commission
DIVERSE BUSINESS (DB) REQUIREMENTS

Diverse Business Participation. The Commission is committed to Diverse Business (DB) participation on competitive contracting opportunities. Firms or entities that have not previously performed work or provided services to the Commission are encouraged to respond to the solicitations. RFPs may include DB participation as part of the criteria for the evaluation of proposals, and the Commission may consider DB participation as a selection factor.

Minimum Participation Level (MPL). The minimum participation level (MPL) for the inclusion of DBs will be established in the RFP/advertisement as a percentage.

(a) General Requirements. Section 303 of Title 74 of the Pennsylvania Consolidated Statutes, 74 Pa.C.S. § 303, requires proposer on contracts funded pursuant to the provisions of Title 74 (Transportation) and 75 (Vehicle Code) administered and issued by the Commission to make Good Faith Efforts to solicit subonsultants that are Diverse Businesses (DBs) as defined in Section 303. The DB requirements of Section 303 apply to this contract.

Section 303 requires proposers to make Good Faith Efforts, as described below, to solicit subconsultants that are DBs during the proposal process to maximize participation of DBs in competitive contracting opportunities.

The Commission is committed to participation by DBs and will enforce the requirements of Section 303 and this section. Failure to make Good Faith Efforts and demonstrate such Good Faith Efforts in the solicitation of subconsultants may result in the proposer being declared ineligible for the contract.

Proposers shall document and submit to the Commission all Good Faith Efforts, as described in this section, to solicit subconsultants that are DBs during the solicitation process.

Proposers are encouraged to utilize and give consideration to consultants offering to utilize DBs in the selection and award of contracts.

Proposers shall not discriminate on the basis of gender, race, creed or color in the award and performance of contracts in accordance with 62 Pa.C.S. §3701.

Failure to comply with the requirements of Section 303 or this specification may result in the imposition of sanctions as appropriate under section 531 of the Procurement Code, 62 Pa.C.S.§ 531 relating to debarment and suspension.

The Commission's Director of the Office of Diversity and Inclusion, or designee, is designated the Responsible Official who shall supervise the DB program and ensure that the Commission complies with the DB program.

(b) Definitions. The following definitions apply to terms used in this specification:

1. Disadvantaged Business – A business that is owned or controlled by a majority of persons, not limited to members of minority groups, who are subject to racial, social, ethnic prejudice or cultural bias.

2. Diverse Business – A disadvantaged business, minority-owned or women-owned business or service-disabled veteran-owned or veteran-owned small business that has been certified by a third-party certifying organization.

3. Minority-owned Business – A business owned and controlled by a majority of individuals who are African Americans, Hispanic Americans, Native Americans, Asian Americans, Alaskans or Pacific Islanders.

4. Professional Services – An industry of infrequent, technical or unique functions performed by independent contractors or consultants whose occupation is the rendering of the

services, including: (1) design professional services as defined in 62 Pa.C.S.§ 901 (relating to definitions); (2) legal services; (3) advertising or public relations services; (4) accounting, auditing or actuarial services; (5) security consultant services; (6) computer and information technology services; and (7) insurance underwriting services.

5. Pro Forma Effort-The act of completing a form or document identifying efforts to solicit DBs for a project in order to satisfy criteria with little or no expectation that the DBs contacted or identified will perform any of the work.

6. Service-Disabled Veteran-Owned Small Business – A business in the United States which is independently owned and controlled by a service-disabled veteran(s), not dominant in its field of operation, and employs 100 or fewer employees.

7. Subconsultant- Any individual, partnership, firm, or corporation entering into a contract with the prime consultant for work under the contract, including those providing professional and other services.

8. Third-party Certifying Organization – An organization that certifies a small business, minority-owned business, women-owned business or veteran-owned small business as a diverse business. The term includes: (1) the National Minority Supplier Development Council; (2) the Women's Business Development Enterprise National Council; (3) the Small Business Administration; (4) The Department of Veteran Affairs; (5) the Pennsylvania Unified Certification Program.

9. Veteran-owned Small Business –A small business owned and controlled by a veteran or veterans.

10. Women-Owned Business – A business owned and controlled by a majority of individuals who are women.

(c) Actions Required by Proposer during the procurement/consultant selection phase

1. Submission Requirements – Consultant Responsiveness.

a. **Minimum Participation Level (MPL) Documentation -** If the documentation submitted with the proposal demonstrates that the proposer has identified DBs sufficient to meet the MPL established for this contract, the proposer will be deemed to have satisfied the DB requirement during this phase. The proposer is required to provide the business name and business address of each DB and supporting documentation that includes proof of certification.

If the consultant's proposal demonstrates the consultant's inability to meet the MPL established for this contract, the proposer shall demonstrate Good Faith Efforts with its proposal. Failure to submit the required documentation demonstrating Good Faith Efforts as further described below with the proposal may result in a rejection of the proposal.

b. If no MPL has been established for this contract, the proposer is required to either provide a statement of intent that it will self-perform 100% of the work for the agreement, or demonstrate Good Faith Efforts to solicit subconsultants that are DBs. In either case documentation shall be provided with the proposal.

Failure to submit the required information identified above with the proposal may result in a rejection of the proposal.

2. Good Faith Effort Requirements: The documentation of Good Faith Efforts must include the business name and business address of each DB considered. Supporting documentation must also include proof of certification and any explanation of Good Faith Efforts the proposer would like the Commission to consider. Any services to be performed by a DB are required to be readily identifiable to the agreement. Good Faith efforts are demonstrated by seeking out DB participation in the project given all relevant circumstances. The Commission requires the proposer to demonstrate more than Pro Forma Efforts. Evidence of Good Faith Efforts includes, but is not limited to:

a. Consultant solicits through all reasonable and available means the interest of all certified DBs with the capacity to perform the scope of work set forth in the agreement.
b. The proposer must provide written notification at least 5 business days before proposals are due to allow the DBs to respond to the solicitation.
c. The proposer must determine with certainty if DBs are interested by taking appropriate steps to follow up initial solicitations.
d. The proposer must make efforts to select portions of the work to be performed by DBs to includes, where appropriate, breaking out contract work into economically feasible units to facilitate DB participation;
e. It is the proposer's responsibility to make a portion of the work available to DBs and, to select those portions of the work, so as to facilitate DB participation.
f. The proposer shall provide evidence of such negotiations that include the names, addresses, and telephone numbers of DBs considered; A description of the information provided regarding the required work and services for the work selected for subconsultants; and evidence as to why additional agreements could not be reached for DBs to perform the work.
g. Proposers cannot reject or withhold solicitation of DBs as being unqualified without sound reasons based on a thorough investigation of their capabilities.
h. The DB's standing within its industry, membership in specific groups, organizations or associations and political or social affiliations (for example union v. non-union employee status) are not legitimate causes for the rejection or non-solicitation of proposals in the proposer's efforts to meet the Good Faith Efforts requirement.
i. Efforts to assist interested DBs in obtaining bonding, lines of credit or insurance.

3. Actions Taken by the Commission. As part of the proposal review process, the Commission will review the submissions to determine whether the proposer has complied with Section 303 and this requirement in the selection of DB subconsultants. The Commission will determine whether the proposer has either met the MPL or provided acceptable documentation as noted above. The Commission reserves the right to contact proposers for clarification during the review and negotiation process.

If the Commission determines that the proposer has failed to either meet the MPL or provide acceptable documentation as noted above, the proposal may be rejected.

(d) Consultant Requirements During Performance of Services.

1. Replacement of a DB Subconsultant. Consultant must continue good faith efforts through completion of the contract. The obligation to make Good Faith

Efforts to solicit subconsultants for any type of service extends to additional work required for any service which is identified to be performed by a DB. If at any time during the performance of the work, it becomes necessary to replace or add a subconsultant that is a DB, the consultant, as appropriate, shall immediately notify the Commission and seek approval in writing in accordance with the Agreement of the need to replace the DB, which notice shall include the reasons for the replacement. If a prime consultant who originally indicated that it would self-perform all work subsequently decides to use a subconsultant for any work under the contract, the consultant must submit documentation of all Good Faith Efforts as to the work for which a subconsultant is obtained.

2. Records. Maintain project records as are necessary to evaluate DB compliance and as necessary to perform the reporting function addressed below. Maintain all records for a period of 3 years following acceptance of final payment. Make these records available for inspection by the Commission, its designees or agents. These records should indicate:

2.a. The number of DB and non-DB subconsultants and the type of services performed on or incorporated in this project.

2.b. The progress and efforts made in seeking out DB subconsultant organizations and individual DB consultants for work on this project to increase the amount of DB participation and/or to maintain the commitments made at the time of the proposal to DBs.

2.c. Documentation of all correspondence, contacts, telephone calls, and other contacts made to obtain the service of DBs on this project.

3. Reports. Maintain monthly reports and submit reports as required by the Commission concerning those contracts and other business executed with DBs with respect to the records referred to in subsection (e)2. above in such form and manner as prescribed by the Commission. At a minimum, the Reports shall contain the following:

3.a The number of Contracts with DBs noting the type of services provided, including the execution date of each contract.

3.b The amounts paid to each DB during the month, the dates of payment, and the overall amounts paid to date. If no payments are made to a DB during the month, enter a zero ($0) payment.

3.c Upon request and upon completion of individual DB firm's work, submit paid invoices or a certification attesting to the actual amount paid. In the event the actual amount paid is less than the award amount, a complete explanation of difference is required.

4. Subconsultant Contracts

4.a. Subcontracts with DB firms will not contain provisions waiving legal rights or remedies provided by laws or regulations of the Federal Government or the Commonwealth of Pennsylvania or the Commission through contract provisions or regulations.

4.b. Prime consultant will not impose provisions on DB subconsultants that are more onerous or restrictive than the terms of the prime's contract with non-DBs.

4.c. Executed copies of subcontracts/purchase orders are to be received by the Commission before the commencement of work by the DB.

5. Payments to DB Subconsultants. Payments to DBs are to be made in accordance with the prompt payment requirements of Chapter 39, Subchapter D of the Procurement Code, 62 Pa.C.S. §3931 et seq. Performance of services by a DB subconsultant in accordance with the terms of the contract entitles the subconsultant to payment.

(e) Actions to be Taken by Commission After Performance of Services. Following completion of the Consultant's services, the Director of the Commission's Office of Diversity and Inclusion or his/her designee will review the overall DB participation to assess the Consultant's compliance with Section 303 and this contract. Appropriate sanctions may be imposed under 62 Pa.C.S. § 531 (relating to debarment or suspension) for a Consultant's failure to comply with Section 303 and the requirements of the contract.

Exhibit J
Prevailing Wage Rate Requirements

pennsylvania
DEPARTMENT OF LABOR & INDUSTRY

BUREAU OF LABOR LAW COMPLIANCE

PREVAILING WAGES PROJECT RATES

Project Name: Southern Beltway Cashless Tolling Implementation & Maintenance
Awarding Agency: Pennsylvania Turnpike Commission
Contract Award Date: 5/27/2016
Serial Number: 16-00527
Project Classification: Building
Determination Date: 1/28/2016
Assigned Field Office: Pittsburgh
Field Office Phone Number: 412-565-5300
Toll Free Phone Number: 877-504-8354

Allegheny County

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	8/1/2012		$32.94	$21.77	$54.71
Asbestos & Insulation Workers	8/1/2013		$33.67	$22.37	$56.04
Asbestos & Insulation Workers	8/1/2014		$34.61	$22.90	$57.51
Asbestos & Insulation Workers	8/1/2015		$35.17	$23.20	$58.37
Boilermakers	6/1/2008		$33.90	$20.06	$53.96
Boilermakers	8/1/2010		$37.52	$22.49	$60.01
Boilermakers	6/1/2011		$38.10	$24.36	$62.46
Boilermakers	6/1/2014		$40.90	$26.16	$67.06
Bricklayer	12/1/2014		$31.17	$19.00	$50.17
Bricklayer	6/1/2015		$31.42	$19.07	$50.49
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2013		$30.28	$14.33	$44.61
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2014		$30.79	$14.58	$45.37
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	1/1/2015		$30.92	$14.95	$45.87
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2015		$31.73	$15.35	$47.08

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2016		$32.36	$15.98	$48.34
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2017		$33.01	$16.63	$49.64
Cement Finishers	6/1/2013		$27.64	$15.32	$42.96
Cement Finishers	6/9/2014		$28.31	$15.55	$43.86
Cement Finishers	12/1/2014		$28.41	$15.70	$44.11
Cement Finishers	6/1/2015		$28.56	$16.75	$45.31
Cement Finishers	6/1/2016		$28.71	$17.85	$46.56
Dockbuilder, Pile Drivers	1/1/2010		$29.95	$12.25	$42.20
Dockbuilder, Pile Drivers	1/1/2011		$30.35	$13.10	$43.45
Dockbuilder, Pile Drivers	1/1/2012		$30.85	$13.70	$44.55
Dockbuilder, Pile Drivers	1/1/2013		$31.45	$14.20	$45.65
Dockbuilder, Pile Drivers	1/1/2014		$31.45	$15.60	$47.05
Dockbuilder, Pile Drivers	1/1/2015		$31.74	$16.57	$48.31
Dockbuilder, Pile Drivers	1/1/2016		$32.03	$17.53	$49.56
Drywall Finisher	6/1/2013		$26.13	$16.06	$42.19
Drywall Finisher	6/1/2014		$26.71	$16.63	$43.34
Drywall Finisher	6/1/2015		$27.29	$17.20	$44.49
Drywall Finisher	6/1/2015		$27.29	$17.20	$44.49
Electric Lineman	5/30/2011		$38.88	$17.96	$56.84
Electric Lineman	11/28/2011		$39.78	$18.20	$57.98
Electric Lineman	5/28/2012		$40.70	$18.45	$59.15
Electric Lineman	11/26/2012		$41.63	$18.70	$60.33
Electric Lineman	6/3/2013		$42.84	$18.86	$61.70
Electric Lineman	6/2/2014		$44.35	$19.14	$63.49
Electricians & Telecommunications Installation Technician	12/21/2013		$39.71	$21.10	$60.81
Electricians & Telecommunications Installation Technician	12/26/2014		$37.76	$23.98	$61.74
Electricians & Telecommunications Installation Technician	12/25/2015		$39.11	$23.98	$63.09
Electricians & Telecommunications Installation Technician	12/23/2016		$40.61	$23.98	$64.59
Elevator Constructor	1/1/2013		$42.61	$25.49	$68.10

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Elevator Constructor	1/1/2014		$43.22	$27.09	$70.31
Elevator Constructor	1/1/2015		$43.90	$28.69	$72.59
Elevator Constructor	1/1/2016		$44.80	$30.29	$75.09
Glazier	9/1/2014		$27.98	$18.87	$46.85
Glazier	9/1/2015		$28.34	$19.76	$48.10
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2014		$32.43	$27.12	$59.55
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2015		$33.18	$27.63	$60.81
Laborers (Class 01 - See notes)	12/1/2009		$20.92	$9.72	$30.64
Laborers (Class 01 - See notes)	6/1/2010		$20.92	$9.72	$30.64
Laborers (Class 01 - See notes)	1/1/2011		$21.17	$10.52	$31.69
Laborers (Class 01 - See notes)	1/1/2012		$21.42	$11.32	$32.74
Laborers (Class 01 - See notes)	1/1/2013		$21.67	$12.12	$33.79
Laborers (Class 01 - See notes)	1/1/2014		$21.92	$12.92	$34.84
Laborers (Class 01 - See notes)	1/1/2015		$22.17	$13.72	$35.89
Laborers (Class 01 - See notes)	1/1/2016		$22.22	$14.67	$36.89
Laborers (Class 01 - See notes)	1/1/2017		$23.27	$14.67	$37.94
Laborers (Class 01 - See notes)	1/1/2018		$24.32	$14.67	$38.99
Laborers (Class 01 - See notes)	1/1/2019		$25.37	$14.67	$40.04
Laborers (Class 01 - See notes)	1/1/2020		$26.42	$14.67	$41.09
Laborers (Class 01 - See notes)	1/1/2021		$27.47	$14.67	$42.14
Laborers (Class 02 - See notes)	12/1/2009		$21.07	$9.72	$30.79
Laborers (Class 02 - See notes)	6/1/2010		$21.07	$9.72	$30.79
Laborers (Class 02 - See notes)	1/1/2011		$21.32	$10.52	$31.84
Laborers (Class 02 - See notes)	1/1/2012		$21.57	$11.32	$32.89
Laborers (Class 02 - See notes)	1/1/2013		$21.82	$12.12	$33.94
Laborers (Class 02 - See notes)	1/1/2014		$22.07	$12.92	$34.99
Laborers (Class 02 - See notes)	1/1/2015		$22.32	$13.72	$36.04
Laborers (Class 02 - See notes)	1/1/2016		$22.37	$14.67	$37.04
Laborers (Class 02 - See notes)	1/1/2017		$23.42	$14.67	$38.09
Laborers (Class 02 - See notes)	1/1/2018		$24.47	$14.67	$39.14

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 02 - See notes)	1/1/2019		$25.52	$14.67	$40.19
Laborers (Class 02 - See notes)	1/1/2020		$26.57	$14.67	$41.24
Laborers (Class 02 - See notes)	1/1/2021		$27.62	$14.67	$42.29
Laborers (Class 03 - See notes)	12/1/2009		$21.20	$9.72	$30.92
Laborers (Class 03 - See notes)	6/1/2010		$21.20	$9.72	$30.92
Laborers (Class 03 - See notes)	1/1/2011		$21.45	$10.52	$31.97
Laborers (Class 03 - See notes)	1/1/2012		$21.70	$11.32	$33.02
Laborers (Class 03 - See notes)	1/1/2013		$21.95	$12.12	$34.07
Laborers (Class 03 - See notes)	1/1/2014		$22.20	$12.92	$35.12
Laborers (Class 03 - See notes)	1/1/2015		$22.45	$13.72	$36.17
Laborers (Class 03 - See notes)	1/1/2016		$22.50	$14.67	$37.17
Laborers (Class 03 - See notes)	1/1/2017		$23.55	$14.67	$38.22
Laborers (Class 03 - See notes)	1/1/2018		$24.60	$14.67	$39.27
Laborers (Class 03 - See notes)	1/1/2019		$25.65	$14.67	$40.32
Laborers (Class 03 - See notes)	1/1/2020		$26.70	$14.67	$41.37
Laborers (Class 03 - See notes)	1/1/2021		$27.75	$14.67	$42.42
Laborers (Class 04 - See notes)	12/1/2009		$21.67	$9.72	$31.39
Laborers (Class 04 - See notes)	6/1/2010		$21.67	$9.72	$31.39
Laborers (Class 04 - See notes)	1/1/2011		$21.92	$10.52	$32.44
Laborers (Class 04 - See notes)	1/1/2012		$22.17	$11.32	$33.49
Laborers (Class 04 - See notes)	1/1/2013		$22.42	$12.12	$34.54
Laborers (Class 04 - See notes)	1/1/2014		$22.67	$12.92	$35.59
Laborers (Class 04 - See notes)	1/1/2015		$22.92	$13.72	$36.64
Laborers (Class 04 - See notes)	1/1/2016		$22.97	$14.67	$37.64
Laborers (Class 04 - See notes)	1/1/2017		$24.02	$14.67	$38.69
Laborers (Class 04 - See notes)	1/1/2018		$25.07	$14.67	$39.74
Laborers (Class 04 - See notes)	1/1/2019		$26.12	$14.67	$40.79
Laborers (Class 04 - See notes)	1/1/2020		$27.17	$14.67	$41.84
Laborers (Class 04 - See notes)	1/1/2021		$28.22	$14.67	$42.89
Landscape Laborer	7/1/2010		$18.25	$9.90	$28.15
Landscape Laborer	7/1/2014		$18.50	$12.45	$30.95

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Landscape Laborer	1/1/2015		$18.50	$12.45	$30.95
Landscape Laborer	7/1/2015		$19.35	$12.45	$31.80
Landscape Laborer	1/1/2016		$20.51	$13.49	$34.00
Landscape Laborer (Skilled)	7/1/2010		$18.67	$9.90	$28.57
Landscape Laborer (Skilled)	7/1/2014		$18.92	$12.45	$31.37
Landscape Laborer (Skilled)	1/1/2015		$18.92	$12.45	$31.37
Landscape Laborer (Skilled)	7/1/2015		$19.77	$12.45	$32.22
Landscape Laborer (Skilled)	1/1/2016		$20.93	$13.49	$34.42
Landscape Laborer (Tractor Operator)	7/1/2010		$18.97	$9.90	$28.87
Landscape Laborer (Tractor Operator)	7/1/2014		$19.22	$12.45	$31.67
Landscape Laborer (Tractor Operator)	1/1/2015		$19.22	$12.45	$31.67
Landscape Laborer (Tractor Operator)	7/1/2015		$20.07	$12.45	$32.52
Landscape Laborer (Tractor Operator)	1/1/2016		$21.23	$13.49	$34.72
Marble Finisher	6/1/2010		$19.52	$11.70	$31.22
Marble Finisher	6/1/2011		$20.57	$11.85	$32.42
Marble Finisher	6/1/2012		$21.27	$11.35	$32.62
Marble Finisher	6/1/2013		$21.95	$11.65	$33.60
Marble Finisher	6/1/2014		$22.15	$12.40	$34.55
Marble Finisher	12/1/2014		$22.38	$12.67	$35.05
Marble Finisher	6/1/2015		$22.55	$12.79	$35.34
Marble Mason	6/1/2010		$19.42	$9.41	$28.83
Marble Mason	12/1/2011		$19.42	$9.60	$29.02
Marble Mason	6/1/2014		$19.43	$9.87	$29.30
Marble Mason	12/1/2014		$19.43	$10.00	$29.43
Millwright	6/1/2011		$34.42	$15.08	$49.50
Millwright	6/1/2012		$35.89	$16.11	$52.00
Millwright	6/1/2013		$36.49	$16.76	$53.25
Millwright	6/1/2014		$37.35	$17.15	$54.50
Millwright	6/1/2015		$38.24	$17.46	$55.70
Millwright	6/1/2016		$38.91	$18.14	$57.05
Millwright	6/1/2017		$39.83	$18.57	$58.40

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Class 01 - see notes)	6/17/2012		$31.59	$16.94	$48.53
Operators (Class 01 - see notes)	6/1/2013		$32.09	$17.59	$49.68
Operators (Class 01 - see notes)	6/1/2014		$32.59	$18.24	$50.83
Operators (Class 01 - see notes)	6/1/2015		$33.19	$18.89	$52.08
Operators (Class 01 - see notes)	6/1/2016		$33.79	$19.59	$53.38
Operators (Class 02 -see notes)	6/17/2012		$27.66	$16.94	$44.60
Operators (Class 02 -see notes)	6/1/2013		$28.01	$17.59	$45.60
Operators (Class 02 -see notes)	6/1/2014		$28.36	$18.24	$46.60
Operators (Class 02 -see notes)	6/1/2015		$28.76	$18.89	$47.65
Operators (Class 02 -see notes)	6/1/2016		$29.16	$19.59	$48.75
Operators (Class 03 - see notes)	6/17/2012		$25.84	$16.94	$42.78
Operators (Class 03 - see notes)	6/1/2013		$26.09	$17.59	$43.68
Operators (Class 03 - see notes)	6/1/2014		$26.34	$18.24	$44.58
Operators (Class 03 - see notes)	6/1/2015		$26.64	$18.89	$45.53
Operators (Class 03 - see notes)	6/1/2016		$26.94	$19.59	$46.53
Painters Class 6 (see notes)	6/1/2013		$26.78	$15.03	$41.81
Painters Class 6 (see notes)	6/1/2014		$26.98	$15.88	$42.86
Painters Class 6 (see notes)	6/1/2015		$27.18	$16.73	$43.91
Painters Class 6 (see notes)	6/1/2016		$27.38	$17.58	$44.96
Pile Driver Divers (Building, Heavy, Highway)	1/1/2010		$44.39	$12.25	$56.64
Pile Driver Divers (Building, Heavy, Highway)	1/1/2010		$44.39	$12.25	$56.64
Pile Driver Divers (Building, Heavy, Highway)	1/1/2011		$45.53	$13.00	$58.53
Pile Driver Divers (Building, Heavy, Highway)	1/1/2012		$46.28	$13.60	$59.88
Pile Driver Divers (Building, Heavy, Highway)	1/1/2013		$47.18	$14.10	$61.28
Plasterers	6/1/2013		$27.37	$12.86	$40.23
Plasterers	6/1/2014		$27.67	$13.61	$41.28
Plasterers	6/1/2015		$27.97	$14.36	$42.33
Plumbers	6/1/2014		$37.95	$19.52	$57.47
Plumbers	6/1/2015		$37.95	$20.52	$58.47
Plumbers	6/1/2016		$38.95	$20.52	$59.47

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Plumbers	6/1/2017		$39.95	$20.52	$60.47
Pointers, Caulkers, Cleaners	6/1/2010		$25.98	$14.33	$40.31
Pointers, Caulkers, Cleaners	12/1/2010		$26.36	$14.53	$40.89
Pointers, Caulkers, Cleaners	6/1/2011		$26.87	$14.53	$41.40
Pointers, Caulkers, Cleaners	12/1/2011		$27.10	$15.03	$42.13
Pointers, Caulkers, Cleaners	6/1/2012		$27.41	$15.23	$42.64
Pointers, Caulkers, Cleaners	6/1/2014		$28.71	$16.05	$44.76
Pointers, Caulkers, Cleaners	12/1/2014		$28.77	$16.34	$45.11
Pointers, Caulkers, Cleaners	6/1/2015		$29.25	$16.36	$45.61
Roofers	12/1/2013		$28.74	$12.85	$41.59
Roofers	6/1/2014		$29.54	$12.88	$42.42
Roofers	12/1/2014		$29.35	$13.07	$42.42
Roofers	6/1/2015		$30.35	$13.07	$43.42
Roofers	12/1/2015		$29.85	$13.57	$43.42
Sheet Metal Workers	7/1/2014		$32.97	$24.41	$57.38
Sheet Metal Workers	7/1/2015		$33.50	$25.36	$58.86
Sprinklerfitters	1/1/2015		$34.57	$18.97	$53.54
Sprinklerfitters	7/1/2015		$35.72	$18.97	$54.69
Sprinklerfitters	1/1/2016		$35.32	$19.37	$54.69
Sprinklerfitters	7/1/2016		$36.57	$19.37	$55.94
Sprinklerfitters	1/1/2017		$36.57	$19.37	$55.94
Sprinklerfitters	7/1/2017		$37.57	$19.37	$56.94
Steamfitters	6/1/2015		$40.51	$19.01	$59.52
Steamfitters	6/1/2016		$41.11	$19.01	$60.12
Steamfitters	6/1/2017		$41.71	$19.01	$60.72
Stone Masons	6/1/2015		$32.22	$18.50	$50.72
Terrazzo Finisher	12/1/2009		$25.76	$12.54	$38.30
Terrazzo Finisher	12/1/2010		$26.36	$13.19	$39.55
Terrazzo Finisher	6/1/2011		$27.06	$13.49	$40.55
Terrazzo Finisher	12/1/2011		$27.06	$13.49	$40.55
Terrazzo Finisher	6/1/2012		$27.56	$13.02	$40.58

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Terrazzo Finisher	4/1/2013		$27.56	$13.27	$40.83
Terrazzo Finisher	2/1/2014		$28.45	$13.88	$42.33
Terrazzo Finisher	6/1/2014		$29.00	$13.93	$42.93
Terrazzo Finisher	12/1/2014		$29.40	$14.18	$43.58
Terrazzo Finisher	6/1/2015		$30.31	$14.27	$44.58
Terrazzo Setter	4/1/2013		$28.10	$14.28	$42.38
Terrazzo Setter	2/1/2014		$28.80	$15.08	$43.88
Terrazzo Setter	6/1/2014		$29.33	$15.15	$44.48
Terrazzo Setter	12/1/2014		$29.48	$15.65	$45.13
Terrazzo Setter	6/1/2015		$30.13	$16.00	$46.13
Tile Finisher	6/1/2009		$20.77	$10.55	$31.32
Tile Finisher	12/1/2009		$20.92	$11.05	$31.97
Tile Finisher	6/1/2010		$21.12	$11.70	$32.82
Tile Finisher	6/1/2011		$22.17	$11.85	$34.02
Tile Finisher	6/1/2012		$22.87	$11.38	$34.25
Tile Finisher	6/1/2013		$23.55	$11.65	$35.20
Tile Finisher	6/1/2014		$23.75	$12.40	$36.15
Tile Finisher	12/1/2014		$23.98	$12.67	$36.65
Tile Finisher	6/1/2015		$24.15	$12.79	$36.94
Tile Setter	6/1/2014		$29.64	$16.27	$45.91
Tile Setter	12/1/2014		$29.83	$16.61	$46.44
Truckdriver class 1(see notes)	1/1/2009		$24.23	$11.44	$35.67
Truckdriver class 1(see notes)	1/1/2010		$24.98	$12.04	$37.02
Truckdriver class 1(see notes)	1/1/2011		$25.48	$12.79	$38.27
Truckdriver class 1(see notes)	1/1/2012		$25.88	$13.49	$39.37
Truckdriver class 1(see notes)	1/1/2013		$26.25	$14.22	$40.47
Truckdriver class 1(see notes)	1/1/2014		$26.71	$15.01	$41.72
Truckdriver class 1(see notes)	1/1/2015		$27.17	$15.80	$42.97
Truckdriver class 1(see notes)	1/1/2016		$27.62	$16.60	$44.22
Truckdriver class 2 (see notes)	1/1/2009		$24.38	$11.51	$35.89
Truckdriver class 2 (see notes)	1/1/2010		$25.13	$12.11	$37.24

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Truckdriver class 2 (see notes)	1/1/2011		$25.64	$12.85	$38.49
Truckdriver class 2 (see notes)	1/1/2012		$26.02	$13.57	$39.59
Truckdriver class 2 (see notes)	1/1/2013		$26.40	$14.29	$40.69
Truckdriver class 2 (see notes)	1/1/2014		$26.85	$15.09	$41.94
Truckdriver class 2 (see notes)	1/1/2015		$27.31	$15.88	$43.19
Truckdriver class 2 (see notes)	1/1/2016		$27.75	$16.69	$44.44
Truckdriver class 3 (see notes)	1/1/2009		$24.91	$11.75	$36.66
Truckdriver class 3 (see notes)	1/1/2010		$25.64	$12.37	$38.01
Truckdriver class 3 (see notes)	1/1/2011		$26.15	$13.11	$39.26
Truckdriver class 3 (see notes)	1/1/2012		$26.53	$13.83	$40.36
Truckdriver class 3 (see notes)	1/1/2013		$26.90	$14.56	$41.46
Truckdriver class 3 (see notes)	1/1/2014		$27.35	$15.37	$42.72
Truckdriver class 3 (see notes)	1/1/2015		$27.80	$16.16	$43.96
Truckdriver class 3 (see notes)	1/1/2016		$28.23	$16.98	$45.21

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter Welder	1/1/2009		$28.23	$12.16	$40.39
Carpenter Welder	1/1/2010		$29.18	$12.56	$41.74
Carpenter Welder	1/1/2011		$29.42	$13.57	$42.99
Carpenter Welder	1/1/2012		$29.69	$14.40	$44.09
Carpenter Welder	1/1/2013		$30.07	$15.12	$45.19
Carpenter Welder	1/1/2014		$30.92	$15.52	$46.44
Carpenter Welder	1/1/2015		$31.55	$16.14	$47.69
Carpenter Welder	1/1/2016		$32.38	$16.56	$48.94
Carpenters	1/1/2013		$29.37	$15.12	$44.49
Carpenters	1/1/2014		$30.22	$15.52	$45.74
Carpenters	1/1/2015		$30.85	$16.14	$46.99
Carpenters	1/1/2016		$31.68	$16.56	$48.24
Cement Finishers	1/1/2013		$28.60	$15.89	$44.49
Cement Finishers	1/1/2014		$29.45	$16.29	$45.74
Cement Finishers	1/1/2015		$29.60	$17.39	$46.99
Cement Finishers	1/1/2016		$29.75	$18.49	$48.24
Iron Workers	6/1/2009		$29.43	$21.41	$50.84
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2010		$30.03	$22.71	$52.74
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2011		$30.38	$24.36	$54.74
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2012		$31.41	$24.84	$56.25
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2013		$31.98	$25.88	$57.86
Laborers (Class 01 - See notes)	1/1/2015		$24.23	$19.02	$43.25
Laborers (Class 01 - See notes)	1/1/2016		$24.48	$20.02	$44.50
Laborers (Class 02 - See notes)	1/1/2015		$24.39	$19.02	$43.41
Laborers (Class 02 - See notes)	1/1/2016		$24.64	$20.02	$44.66
Laborers (Class 03 - See notes)	1/1/2015		$24.78	$19.02	$43.80
Laborers (Class 03 - See notes)	1/1/2016		$25.03	$20.02	$45.05
Laborers (Class 04 - See notes)	1/1/2015		$25.23	$19.02	$44.25
Laborers (Class 04 - See notes)	1/1/2016		$25.48	$20.02	$45.50
Laborers (Class 05 - See notes)	1/1/2015		$25.64	$19.02	$44.66

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 05 - See notes)	1/1/2016		$25.89	$20.02	$45.91
Laborers (Class 06 - See notes)	1/1/2015		$22.48	$19.02	$41.50
Laborers (Class 06 - See notes)	1/1/2016		$22.73	$20.02	$42.75
Laborers (Class 07 - See notes)	1/1/2015		$25.23	$19.02	$44.25
Laborers (Class 07 - See notes)	1/1/2016		$25.48	$20.02	$45.50
Laborers (Class 08 - See notes)	1/1/2015		$26.73	$19.02	$45.75
Laborers (Class 08 - See notes)	1/1/2016		$26.98	$20.02	$47.00
Operators (Class 01 - see notes)	1/1/2009		$26.38	$14.44	$40.82
Operators (Class 01 - see notes)	1/1/2010		$27.18	$14.99	$42.17
Operators (Class 01 - see notes)	1/1/2011		$27.68	$15.74	$43.42
Operators (Class 01 - see notes)	1/1/2012		$28.08	$16.44	$44.52
Operators (Class 01 - see notes)	1/1/2013		$28.48	$17.14	$45.62
Operators (Class 01 - see notes)	1/1/2014		$29.04	$17.83	$46.87
Operators (Class 01 - see notes)	1/1/2015		$29.59	$18.53	$48.12
Operators (Class 01 - see notes)	1/1/2016		$30.19	$19.18	$49.37
Operators (Class 02 -see notes)	1/1/2009		$26.12	$14.44	$40.56
Operators (Class 02 -see notes)	1/1/2010		$26.92	$14.99	$41.91
Operators (Class 02 -see notes)	1/1/2011		$27.42	$15.74	$43.16
Operators (Class 02 -see notes)	1/1/2012		$27.82	$16.44	$44.26
Operators (Class 02 -see notes)	1/1/2013		$28.22	$17.14	$45.36
Operators (Class 02 -see notes)	1/1/2014		$28.78	$17.83	$46.61
Operators (Class 02 -see notes)	1/1/2015		$29.33	$18.53	$47.86
Operators (Class 02 -see notes)	1/1/2016		$29.93	$19.18	$49.11
Operators (Class 03 - See notes)	1/1/2009		$22.47	$14.44	$36.91
Operators (Class 03 - See notes)	1/1/2010		$23.27	$14.99	$38.26
Operators (Class 03 - See notes)	1/1/2011		$23.77	$15.74	$39.51
Operators (Class 03 - see notes)	1/1/2012		$24.17	$16.44	$40.61
Operators (Class 03 - See notes)	1/1/2013		$24.57	$17.14	$41.71
Operators (Class 03 - See notes)	1/1/2014		$25.13	$17.83	$42.96
Operators (Class 03 - See notes)	1/1/2015		$25.68	$18.53	$44.21
Operators (Class 03 - See notes)	1/1/2016		$26.28	$19.18	$45.46

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Class 03)	1/1/2011		$23.77	$15.74	$39.51
Operators (Class 04 - See notes)	1/1/2009		$22.01	$14.44	$36.45
Operators (Class 04 - See notes)	1/1/2010		$22.81	$14.99	$37.80
Operators (Class 04 - See notes)	1/1/2011		$23.31	$15.74	$39.05
Operators (Class 04 - See notes)	1/1/2012		$23.71	$16.44	$40.15
Operators (Class 04 - See notes)	1/1/2013		$24.11	$17.14	$41.25
Operators (Class 04 - See notes)	1/1/2014		$24.67	$17.83	$42.50
Operators (Class 04 - See notes)	1/1/2015		$25.22	$18.53	$43.75
Operators (Class 04 - See notes)	1/1/2016		$25.82	$19.18	$45.00
Operators (Class 05 - See notes)	1/1/2009		$21.76	$14.44	$36.20
Operators (Class 05 - See notes)	1/1/2010		$22.56	$14.99	$37.55
Operators (Class 05 - See notes)	1/1/2011		$23.06	$15.74	$38.80
Operators (Class 05 - See notes)	1/1/2012		$23.46	$16.44	$39.90
Operators (Class 05 - See notes)	1/1/2013		$23.86	$17.14	$41.00
Operators (Class 05 - See notes)	1/1/2014		$24.42	$17.83	$42.25
Operators (Class 05 - See notes)	1/1/2015		$24.97	$18.53	$43.50
Operators (Class 05 - See notes)	1/1/2016		$25.57	$19.18	$44.75
Painters Class 1 (see notes)	6/1/2013		$30.38	$15.03	$45.41
Painters Class 1 (see notes)	6/1/2014		$30.78	$15.88	$46.66
Painters Class 1 (see notes)	6/1/2015		$31.18	$16.73	$47.91
Painters Class 1 (see notes)	6/1/2016		$31.58	$17.58	$49.16
Painters Class 1 (see notes)	6/1/2017		$31.98	$18.43	$50.41
Painters Class 2 (see notes)	6/1/2013		$30.38	$15.03	$45.41
Painters Class 2 (see notes)	6/1/2014		$30.78	$15.88	$46.66
Painters Class 2 (see notes)	6/1/2015		$31.18	$16.73	$47.91
Painters Class 2 (see notes)	6/1/2016		$31.58	$17.58	$49.16
Painters Class 2 (see notes)	6/1/2017		$34.08	$18.43	$52.51
Painters Class 3 (see notes)	6/1/2009		$29.81	$12.81	$42.62
Painters Class 3 (see notes)	6/1/2010		$30.48	$13.53	$44.01
Painters Class 3 (see notes)	6/1/2011		$30.48	$15.28	$45.76
Painters Class 3 (see notes)	6/1/2012		$31.70	$14.56	$46.26

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Painters Class 3 (see notes)	6/1/2013		$32.48	$15.03	$47.51
Painters Class 3 (see notes)	6/1/2014		$32.88	$15.88	$48.76
Painters Class 3 (see notes)	6/1/2015		$33.28	$16.73	$50.01
Painters Class 3 (see notes)	6/1/2016		$33.68	$17.58	$51.26
Painters Class 3 (see notes)	6/1/2017		$27.58	$18.48	$46.06
Painters Class 4 (see notes)	6/1/2009		$23.79	$12.81	$36.60
Painters Class 4 (see notes)	6/1/2010		$24.38	$13.53	$37.91
Painters Class 4 (see notes)	6/1/2011		$24.38	$14.93	$39.31
Painters Class 4 (see notes)	6/1/2012		$25.36	$14.56	$39.92
Painters Class 4 (see notes)	6/1/2013		$25.98	$15.03	$41.01
Painters Class 4 (see notes)	6/1/2014		$26.31	$15.88	$42.19
Painters Class 4 (see notes)	6/1/2015		$26.63	$16.73	$43.36
Painters Class 4 (see notes)	6/1/2016		$26.95	$17.58	$44.53
Painters Class 4 (see notes)	6/1/2017		$27.27	$18.43	$45.70
Painters Class 5 (see notes)	6/1/2009		$19.28	$12.81	$32.09
Painters Class 5 (see notes)	6/1/2010		$19.81	$13.53	$33.34
Painters Class 5 (see notes)	6/1/2011		$19.81	$14.67	$34.48
Painters Class 5 (see notes)	6/1/2012		$20.61	$14.56	$35.17
Painters Class 5 (see notes)	6/1/2013		$21.11	$15.03	$36.14
Painters Class 5 (see notes)	6/1/2014		$21.38	$15.88	$37.26
Painters Class 5 (see notes)	6/1/2015		$21.64	$16.73	$38.37
Painters Class 5 (see notes)	6/1/2016		$21.90	$17.58	$39.48
Painters Class 5 (see notes)	6/1/2017		$22.16	$18.43	$40.59
Piledrivers	1/1/2009		$28.85	$12.00	$40.85
Piledrivers	1/1/2010		$29.95	$12.25	$42.20
Piledrivers	1/1/2011		$30.35	$13.10	$43.45
Piledrivers	1/1/2012		$30.85	$13.70	$44.55
Piledrivers	1/1/2013		$31.45	$14.20	$45.65
Piledrivers	1/1/2014		$31.45	$15.45	$46.90
Piledrivers	1/1/2015		$31.74	$16.41	$48.15
Piledrivers	1/1/2016		$32.03	$17.37	$49.40

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2010		$30.27	$26.09	$56.36
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2012		$34.87	$26.86	$61.73
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2013		$36.02	$27.73	$63.75
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2014		$37.19	$28.83	$66.02
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2015		$38.31	$30.08	$68.39

Notes:

If you can not find a classification under Heavy/Highway please refer to the Building classifications.

The Bureau of Labor Law Compliance updated its Pennsylvania Building Journeyperson Laborer Notes to clarify existing tasks performed throughout the Commonwealth. The "Building Laborer Notes" link on the Bureau's website provides a list of those tasks that should be read in conformity with custom and usage of the construction industry in the geographic region in which they are utilized.

For further information on construction types review the "Notes as Referenced in Predeterminations" on the Labor and Industry Website. Go to www.dli.state.pa.us, scroll down to the picture labeled "Labor Law Compliance" and click the picture. Then scroll down on the left menu and click on the "Prevailing Wage" link.

pennsylvania
DEPARTMENT OF LABOR & INDUSTRY

BUREAU OF LABOR LAW COMPLIANCE

PREVAILING WAGES PROJECT RATES

Project Name: Southern Beltway Cashless Tolling Implementation & Maintenance
Awarding Agency: Pennsylvania Turnpike Commission
Contract Award Date: 5/27/2016
Serial Number: 16-00528
Project Classification: Building
Determination Date: 1/28/2016
Assigned Field Office: Pittsburgh
Field Office Phone Number: 412-565-5300
Toll Free Phone Number: 877-504-8354

Washington County

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	8/1/2012		$32.94	$21.77	$54.71
Asbestos & Insulation Workers	8/1/2013		$33.67	$22.37	$56.04
Asbestos & Insulation Workers	8/1/2014		$34.61	$22.90	$57.51
Asbestos & Insulation Workers	8/1/2015		$35.17	$23.20	$58.37
Boilermakers	6/1/2008		$33.90	$20.06	$53.96
Boilermakers	8/1/2010		$37.52	$22.49	$60.01
Boilermakers	6/1/2011		$38.10	$24.36	$62.46
Boilermakers	6/1/2014		$40.90	$26.16	$67.06
Bricklayer	4/1/2015		$30.41	$18.89	$49.30
Bricklayer	6/1/2015		$30.65	$18.97	$49.62
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2013		$30.28	$14.33	$44.61
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2014		$30.79	$14.58	$45.37
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	1/1/2015		$30.92	$14.95	$45.87
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2015		$31.73	$15.35	$47.08

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Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2016		$32.36	$15.98	$48.34
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2017		$33.01	$16.63	$49.64
Cement Finishers	6/1/2013		$27.64	$15.32	$42.96
Cement Finishers	6/9/2014		$28.31	$15.55	$43.86
Cement Finishers	12/1/2014		$28.41	$15.70	$44.11
Cement Finishers	6/1/2015		$28.56	$16.75	$45.31
Cement Finishers	6/1/2016		$28.71	$17.85	$46.56
Dockbuilder, Pile Drivers	1/1/2010		$29.95	$12.25	$42.20
Dockbuilder, Pile Drivers	1/1/2011		$30.35	$13.10	$43.45
Dockbuilder, Pile Drivers	1/1/2012		$30.85	$13.70	$44.55
Dockbuilder, Pile Drivers	1/1/2013		$31.45	$14.20	$45.65
Dockbuilder, Pile Drivers	1/1/2014		$31.45	$15.60	$47.05
Dockbuilder, Pile Drivers	1/1/2015		$31.74	$16.57	$48.31
Dockbuilder, Pile Drivers	1/1/2016		$32.03	$17.53	$49.56
Drywall Finisher	6/1/2013		$26.13	$16.06	$42.19
Drywall Finisher	6/1/2014		$26.71	$16.63	$43.34
Drywall Finisher	6/1/2015		$27.29	$17.20	$44.49
Drywall Finisher	6/1/2015		$27.29	$17.20	$44.49
Electric Lineman	5/31/2010		$38.00	$17.73	$55.73
Electric Lineman	5/30/2011		$38.88	$17.96	$56.84
Electric Lineman	11/28/2011		$39.78	$18.20	$57.98
Electric Lineman	5/28/2012		$40.70	$18.45	$59.15
Electric Lineman	11/26/2012		$41.63	$18.70	$60.33
Electric Lineman	6/3/2013		$42.84	$18.86	$61.70
Electric Lineman	6/2/2014		$44.35	$19.14	$63.49
Electricians & Telecommunications Installation Technician	12/21/2013		$39.71	$21.10	$60.81
Electricians & Telecommunications Installation Technician	12/26/2014		$37.76	$23.98	$61.74
Electricians & Telecommunications Installation Technician	12/25/2015		$39.11	$23.98	$63.09
Electricians & Telecommunications Installation Technician	12/23/2016		$40.61	$23.98	$64.59

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Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Elevator Constructor	1/1/2012		$42.28	$23.84	$66.12
Elevator Constructor	1/1/2013		$42.61	$25.49	$68.10
Elevator Constructor	1/1/2014		$43.22	$27.09	$70.31
Elevator Constructor	1/1/2015		$43.90	$28.69	$72.59
Elevator Constructor	1/1/2016		$44.80	$30.29	$75.09
Glazier	9/1/2014		$27.98	$18.87	$46.85
Glazier	9/1/2015		$28.34	$19.76	$48.10
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2014		$32.43	$27.12	$59.55
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2015		$33.18	$27.63	$60.81
Laborers (Class 01 - See notes)	6/1/2009		$20.92	$9.27	$30.19
Laborers (Class 01 - See notes)	12/1/2009		$20.92	$9.72	$30.64
Laborers (Class 01 - See notes)	6/1/2010		$20.92	$9.72	$30.64
Laborers (Class 01 - See notes)	1/1/2011		$21.17	$10.52	$31.69
Laborers (Class 01 - See notes)	1/1/2012		$21.42	$11.32	$32.74
Laborers (Class 01 - See notes)	1/1/2013		$21.67	$12.12	$33.79
Laborers (Class 01 - See notes)	1/1/2014		$21.92	$12.92	$34.84
Laborers (Class 01 - See notes)	1/1/2015		$22.17	$13.72	$35.89
Laborers (Class 01 - See notes)	1/1/2016		$22.22	$14.67	$36.89
Laborers (Class 01 - See notes)	1/1/2017		$23.27	$14.67	$37.94
Laborers (Class 01 - See notes)	1/1/2018		$24.32	$14.67	$38.99
Laborers (Class 01 - See notes)	1/1/2019		$25.37	$14.67	$40.04
Laborers (Class 01 - See notes)	1/1/2020		$26.42	$14.67	$41.09
Laborers (Class 01 - See notes)	1/1/2021		$27.47	$14.67	$42.14
Laborers (Class 02 - See notes)	6/1/2009		$21.07	$9.27	$30.34
Laborers (Class 02 - See notes)	12/1/2009		$21.07	$9.72	$30.79
Laborers (Class 02 - See notes)	6/1/2010		$21.07	$9.72	$30.79
Laborers (Class 02 - See notes)	1/1/2011		$21.32	$10.52	$31.84
Laborers (Class 02 - See notes)	1/1/2012		$21.57	$11.32	$32.89
Laborers (Class 02 - See notes)	1/1/2013		$21.82	$12.12	$33.94
Laborers (Class 02 - See notes)	1/1/2014		$22.07	$12.92	$34.99

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Laborers (Class 02 - See notes)	1/1/2015		$22.32	$13.72	$36.04
Laborers (Class 02 - See notes)	1/1/2016		$22.37	$14.67	$37.04
Laborers (Class 02 - See notes)	1/1/2017		$23.42	$14.67	$38.09
Laborers (Class 02 - See notes)	1/1/2018		$24.47	$14.67	$39.14
Laborers (Class 02 - See notes)	1/1/2019		$25.52	$14.67	$40.19
Laborers (Class 02 - See notes)	1/1/2020		$26.57	$14.67	$41.24
Laborers (Class 02 - See notes)	1/1/2021		$27.62	$14.67	$42.29
Laborers (Class 03 - See notes)	6/1/2009		$21.20	$9.27	$30.47
Laborers (Class 03 - See notes)	12/1/2009		$21.20	$9.72	$30.92
Laborers (Class 03 - See notes)	6/1/2010		$21.20	$9.72	$30.92
Laborers (Class 03 - See notes)	1/1/2011		$21.45	$10.52	$31.97
Laborers (Class 03 - See notes)	1/1/2012		$21.70	$11.32	$33.02
Laborers (Class 03 - See notes)	1/1/2013		$21.95	$12.12	$34.07
Laborers (Class 03 - See notes)	1/1/2014		$22.20	$12.92	$35.12
Laborers (Class 03 - See notes)	1/1/2015		$22.45	$13.72	$36.17
Laborers (Class 03 - See notes)	1/1/2016		$22.50	$14.67	$37.17
Laborers (Class 03 - See notes)	1/1/2017		$23.55	$14.67	$38.22
Laborers (Class 03 - See notes)	1/1/2018		$24.60	$14.67	$39.27
Laborers (Class 03 - See notes)	1/1/2019		$25.65	$14.67	$40.32
Laborers (Class 03 - See notes)	1/1/2020		$26.70	$14.67	$41.37
Laborers (Class 03 - See notes)	1/1/2021		$27.75	$14.67	$42.42
Laborers (Class 04 - See notes)	6/1/2009		$21.67	$9.27	$30.94
Laborers (Class 04 - See notes)	12/1/2009		$21.67	$9.72	$31.39
Laborers (Class 04 - See notes)	6/1/2010		$21.67	$9.72	$31.39
Laborers (Class 04 - See notes)	1/1/2011		$21.92	$10.52	$32.44
Laborers (Class 04 - See notes)	1/1/2012		$22.17	$11.32	$33.49
Laborers (Class 04 - See notes)	1/1/2013		$22.42	$12.12	$34.54
Laborers (Class 04 - See notes)	1/1/2014		$22.67	$12.92	$35.59
Laborers (Class 04 - See notes)	1/1/2015		$22.92	$13.72	$36.64
Laborers (Class 04 - See notes)	1/1/2016		$22.97	$14.67	$37.64
Laborers (Class 04 - See notes)	1/1/2017		$24.02	$14.67	$38.69

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Laborers (Class 04 - See notes)	1/1/2018		$25.07	$14.67	$39.74
Laborers (Class 04 - See notes)	1/1/2019		$26.12	$14.67	$40.79
Laborers (Class 04 - See notes)	1/1/2020		$27.17	$14.67	$41.84
Laborers (Class 04 - See notes)	1/1/2021		$28.22	$14.67	$42.89
Landscape Laborer	7/1/2009		$18.25	$9.05	$27.30
Landscape Laborer	7/1/2010		$18.25	$9.90	$28.15
Landscape Laborer	7/1/2014		$18.50	$12.45	$30.95
Landscape Laborer	1/1/2015		$18.50	$12.45	$30.95
Landscape Laborer	7/1/2015		$19.35	$12.45	$31.80
Landscape Laborer	1/1/2016		$20.51	$13.49	$34.00
Landscape Laborer (Skilled)	7/1/2009		$18.67	$9.05	$27.72
Landscape Laborer (Skilled)	7/1/2010		$18.67	$9.90	$28.57
Landscape Laborer (Skilled)	7/1/2014		$18.92	$12.45	$31.37
Landscape Laborer (Skilled)	1/1/2015		$18.92	$12.45	$31.37
Landscape Laborer (Skilled)	7/1/2015		$19.77	$12.45	$32.22
Landscape Laborer (Skilled)	1/1/2016		$20.93	$13.49	$34.42
Landscape Laborer (Tractor Operator)	7/1/2009		$18.97	$9.05	$28.02
Landscape Laborer (Tractor Operator)	7/1/2010		$18.97	$9.90	$28.87
Landscape Laborer (Tractor Operator)	7/1/2014		$19.22	$12.45	$31.67
Landscape Laborer (Tractor Operator)	1/1/2015		$19.22	$12.45	$31.67
Landscape Laborer (Tractor Operator)	7/1/2015		$20.07	$12.45	$32.52
Landscape Laborer (Tractor Operator)	1/1/2016		$21.23	$13.49	$34.72
Marble Finisher	6/1/2009		$19.17	$10.55	$29.72
Marble Finisher	12/1/2009		$19.32	$11.05	$30.37
Marble Finisher	6/1/2010		$19.52	$11.70	$31.22
Marble Finisher	6/1/2011		$20.57	$11.85	$32.42
Marble Finisher	6/1/2012		$21.27	$11.35	$32.62
Marble Finisher	6/1/2013		$21.95	$11.65	$33.60
Marble Finisher	12/1/2013		$22.07	$11.73	$33.80
Marble Finisher	2/1/2014		$22.07	$12.23	$34.30
Marble Finisher	6/1/2014		$22.15	$12.40	$34.55

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Marble Finisher	12/1/2014		$22.38	$12.67	$35.05
Marble Finisher	6/1/2015		$22.55	$12.79	$35.34
Marble Mason	6/1/2010		$19.42	$9.41	$28.83
Marble Mason	12/1/2011		$19.42	$9.60	$29.02
Marble Mason	12/1/2013		$19.42	$9.85	$29.27
Marble Mason	6/1/2014		$19.43	$9.87	$29.30
Marble Mason	12/1/2014		$19.43	$10.00	$29.43
Millwright	6/1/2011		$34.42	$15.08	$49.50
Millwright	6/1/2012		$35.89	$16.11	$52.00
Millwright	6/1/2013		$36.49	$16.76	$53.25
Millwright	6/1/2014		$37.35	$17.15	$54.50
Millwright	6/1/2015		$38.24	$17.46	$55.70
Millwright	6/1/2016		$38.91	$18.14	$57.05
Millwright	6/1/2017		$39.83	$18.57	$58.40
Operators (Class 01 - see notes)	6/17/2012		$31.59	$16.94	$48.53
Operators (Class 01 - see notes)	6/1/2013		$32.09	$17.59	$49.68
Operators (Class 01 - see notes)	6/1/2014		$32.59	$18.24	$50.83
Operators (Class 01 - see notes)	6/1/2015		$33.19	$18.89	$52.08
Operators (Class 01 - see notes)	6/1/2016		$33.79	$19.59	$53.38
Operators (Class 02 -see notes)	6/17/2012		$27.66	$16.94	$44.60
Operators (Class 02 -see notes)	6/1/2013		$28.01	$17.59	$45.60
Operators (Class 02 -see notes)	6/1/2014		$28.36	$18.24	$46.60
Operators (Class 02 -see notes)	6/1/2015		$28.76	$18.89	$47.65
Operators (Class 02 -see notes)	6/1/2016		$29.16	$19.59	$48.75
Operators (Class 03 - see notes)	6/17/2012		$25.84	$16.94	$42.78
Operators (Class 03 - see notes)	6/1/2013		$26.09	$17.59	$43.68
Operators (Class 03 - see notes)	6/1/2014		$26.34	$18.24	$44.58
Operators (Class 03 - see notes)	6/1/2015		$26.64	$18.89	$45.53
Operators (Class 03 - see notes)	6/1/2016		$26.94	$19.59	$46.53
Painters Class 6 (see notes)	6/1/2013		$26.78	$15.03	$41.81
Painters Class 6 (see notes)	6/1/2014		$26.98	$15.88	$42.86

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Painters Class 6 (see notes)	6/1/2015		$27.18	$16.73	$43.91
Painters Class 6 (see notes)	6/1/2016		$27.38	$17.58	$44.96
Pile Driver Divers (Building, Heavy, Highway)	1/1/2010		$44.39	$12.25	$56.64
Pile Driver Divers (Building, Heavy, Highway)	1/1/2011		$45.53	$13.00	$58.53
Pile Driver Divers (Building, Heavy, Highway)	1/1/2012		$46.28	$13.60	$59.88
Pile Driver Divers (Building, Heavy, Highway)	1/1/2013		$47.18	$14.10	$61.28
Plasterers	6/1/2013		$27.37	$12.86	$40.23
Plasterers	6/1/2014		$27.67	$13.61	$41.28
Plasterers	6/1/2015		$27.97	$14.36	$42.33
Plumbers	6/1/2013		$37.60	$18.57	$56.17
Plumbers	6/1/2014		$37.95	$19.52	$57.47
Pointers, Caulkers, Cleaners	7/1/2009		$25.88	$13.33	$39.21
Pointers, Caulkers, Cleaners	12/1/2009		$25.98	$13.83	$39.81
Pointers, Caulkers, Cleaners	6/1/2010		$25.98	$14.33	$40.31
Pointers, Caulkers, Cleaners	12/1/2010		$26.36	$14.53	$40.89
Pointers, Caulkers, Cleaners	6/1/2011		$26.87	$14.53	$41.40
Pointers, Caulkers, Cleaners	12/1/2011		$27.10	$15.03	$42.13
Pointers, Caulkers, Cleaners	6/1/2012		$27.41	$15.23	$42.64
Pointers, Caulkers, Cleaners	12/1/2013		$28.47	$15.79	$44.26
Pointers, Caulkers, Cleaners	6/1/2014		$28.71	$16.05	$44.76
Pointers, Caulkers, Cleaners	12/1/2014		$28.77	$16.34	$45.11
Pointers, Caulkers, Cleaners	6/1/2015		$29.25	$16.36	$45.61
Roofers	12/1/2013		$28.74	$12.85	$41.59
Roofers	6/1/2014		$29.54	$12.88	$42.42
Roofers	12/1/2014		$29.35	$13.07	$42.42
Roofers	6/1/2015		$30.35	$13.07	$43.42
Roofers	12/1/2015		$29.85	$13.57	$43.42
Sheet Metal Workers	7/1/2014		$32.97	$24.41	$57.38
Sheet Metal Workers	7/1/2015		$33.50	$25.36	$58.86
Sprinklerfitters	7/1/2013		$33.69	$20.12	$53.81

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Sprinklerfitters	4/1/2014		$34.36	$20.47	$54.83
Sprinklerfitters	4/1/2015		$35.05	$20.62	$55.67
Steamfitters	6/1/2015		$40.51	$19.01	$59.52
Steamfitters	6/1/2016		$41.11	$19.01	$60.12
Steamfitters	6/1/2017		$41.71	$19.01	$60.72
Steamfitters (Building, Heavy, Highway)	6/1/2014		$39.58	$19.29	$58.87
Steamfitters (Building, Heavy, Highway)	6/1/2015		$40.51	$19.01	$59.52
Stone Masons	6/1/2015		$32.22	$18.50	$50.72
Terrazzo Finisher	6/1/2009		$25.61	$12.04	$37.65
Terrazzo Finisher	12/1/2009		$25.76	$12.54	$38.30
Terrazzo Finisher	12/1/2010		$26.36	$13.19	$39.55
Terrazzo Finisher	6/1/2011		$27.06	$13.49	$40.55
Terrazzo Finisher	12/1/2011		$27.06	$13.49	$40.55
Terrazzo Finisher	6/1/2012		$27.56	$13.02	$40.58
Terrazzo Finisher	4/1/2013		$27.56	$13.27	$40.83
Terrazzo Finisher	12/1/2013		$28.45	$13.38	$41.83
Terrazzo Finisher	2/1/2014		$28.45	$13.88	$42.33
Terrazzo Finisher	2/1/2014		$28.45	$13.88	$42.33
Terrazzo Finisher	6/1/2014		$29.00	$13.93	$42.93
Terrazzo Finisher	12/1/2014		$29.40	$14.18	$43.58
Terrazzo Finisher	6/1/2015		$30.31	$14.27	$44.58
Terrazzo Mechanics	6/1/2015		$30.13	$16.00	$46.13
Terrazzo Setter	12/1/2013		$28.80	$14.58	$43.38
Terrazzo Setter	2/1/2014		$28.80	$15.08	$43.88
Terrazzo Setter	6/1/2014		$29.33	$15.15	$44.48
Terrazzo Setter	12/1/2014		$29.48	$15.65	$45.13
Tile Finisher	6/1/2009		$20.77	$10.55	$31.32
Tile Finisher	12/1/2009		$20.92	$11.05	$31.97
Tile Finisher	6/1/2010		$21.12	$11.70	$32.82
Tile Finisher	6/1/2011		$22.17	$11.85	$34.02
Tile Finisher	6/1/2012		$22.87	$11.38	$34.25

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Tile Finisher	6/1/2013		$23.55	$11.65	$35.20
Tile Finisher	12/1/2013		$23.67	$11.73	$35.40
Tile Finisher	2/1/2014		$23.67	$12.23	$35.90
Tile Finisher	6/1/2014		$23.75	$12.40	$36.15
Tile Finisher	12/1/2014		$23.98	$12.67	$36.65
Tile Finisher	6/1/2015		$24.15	$12.79	$36.94
Tile Setter	6/1/2009		$26.85	$13.45	$40.30
Tile Setter	12/1/2009		$27.10	$13.95	$41.05
Tile Setter	6/1/2010		$27.40	$14.60	$42.00
Tile Setter	6/1/2011		$28.39	$15.01	$43.40
Tile Setter	6/1/2012		$28.76	$15.07	$43.83
Tile Setter	6/1/2013		$29.48	$15.40	$44.88
Tile Setter	12/1/2013		$29.56	$15.57	$45.13
Tile Setter	2/1/2014		$29.56	$16.07	$45.63
Tile Setter	6/1/2014		$29.64	$16.27	$45.91
Tile Setter	12/1/2014		$29.83	$16.61	$46.44
Truckdriver class 1(see notes)	1/1/2009		$24.23	$11.44	$35.67
Truckdriver class 1(see notes)	1/1/2010		$24.98	$12.04	$37.02
Truckdriver class 1(see notes)	1/1/2011		$25.48	$12.79	$38.27
Truckdriver class 1(see notes)	1/1/2012		$25.88	$13.49	$39.37
Truckdriver class 1(see notes)	1/1/2013		$26.25	$14.22	$40.47
Truckdriver class 1(see notes)	1/1/2014		$26.71	$15.01	$41.72
Truckdriver class 1(see notes)	1/1/2015		$27.17	$15.80	$42.97
Truckdriver class 1(see notes)	1/1/2016		$27.62	$16.60	$44.22
Truckdriver class 2 (see notes)	1/1/2009		$24.38	$11.51	$35.89
Truckdriver class 2 (see notes)	1/1/2010		$25.13	$12.11	$37.24
Truckdriver class 2 (see notes)	1/1/2011		$25.64	$12.85	$38.49
Truckdriver class 2 (see notes)	1/1/2012		$26.02	$13.57	$39.59
Truckdriver class 2 (see notes)	1/1/2013		$26.40	$14.29	$40.69
Truckdriver class 2 (see notes)	1/1/2014		$26.85	$15.09	$41.94
Truckdriver class 2 (see notes)	1/1/2015		$27.31	$15.88	$43.19

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Truckdriver class 2 (see notes)	1/1/2016		$27.75	$16.69	$44.44
Truckdriver class 3 (see notes)	1/1/2009		$24.91	$11.75	$36.66
Truckdriver class 3 (see notes)	1/1/2010		$25.64	$12.37	$38.01
Truckdriver class 3 (see notes)	1/1/2011		$26.15	$13.11	$39.26
Truckdriver class 3 (see notes)	1/1/2012		$26.53	$13.83	$40.36
Truckdriver class 3 (see notes)	1/1/2013		$26.90	$14.56	$41.46
Truckdriver class 3 (see notes)	1/1/2014		$27.35	$15.37	$42.72
Truckdriver class 3 (see notes)	1/1/2015		$27.80	$16.16	$43.96
Truckdriver class 3 (see notes)	1/1/2016		$28.23	$16.98	$45.21

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter Welder	1/1/2009		$28.23	$12.16	$40.39
Carpenter Welder	1/1/2010		$29.18	$12.56	$41.74
Carpenter Welder	1/1/2011		$29.42	$13.57	$42.99
Carpenter Welder	1/1/2012		$29.69	$14.40	$44.09
Carpenter Welder	1/1/2013		$30.07	$15.12	$45.19
Carpenter Welder	1/1/2014		$30.92	$15.52	$46.44
Carpenter Welder	1/1/2015		$31.55	$16.14	$47.69
Carpenter Welder	1/1/2016		$32.38	$16.56	$48.94
Carpenters	1/1/2009		$27.53	$12.16	$39.69
Carpenters	1/1/2010		$28.48	$12.56	$41.04
Carpenters	1/1/2011		$28.72	$13.57	$42.29
Carpenters	1/1/2012		$28.99	$14.40	$43.39
Carpenters	1/1/2013		$29.37	$15.12	$44.49
Carpenters	1/1/2014		$30.22	$15.52	$45.74
Carpenters	1/1/2015		$30.85	$16.14	$46.99
Carpenters	1/1/2016		$31.68	$16.56	$48.24
Cement Finishers	1/1/2009		$26.72	$12.97	$39.69
Cement Finishers	1/1/2010		$27.62	$13.42	$41.04
Cement Finishers	1/1/2011		$28.02	$14.27	$42.29
Cement Finishers	1/1/2012		$28.22	$15.17	$43.39
Cement Finishers	1/1/2013		$28.60	$15.89	$44.49
Cement Finishers	1/1/2014		$29.45	$16.29	$45.74
Cement Finishers	1/1/2015		$29.60	$17.39	$46.99
Cement Finishers	1/1/2016		$29.75	$18.49	$48.24
Iron Workers	6/1/2009		$29.43	$21.41	$50.84
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2010		$30.03	$22.71	$52.74
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2011		$30.38	$24.36	$54.74
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2012		$31.41	$24.84	$56.25
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2013		$31.98	$25.88	$57.86
Laborers (Class 01 - See notes)	1/1/2015		$24.23	$19.02	$43.25

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 01 - See notes)	1/1/2016		$24.48	$20.02	$44.50
Laborers (Class 02 - See notes)	1/1/2015		$24.39	$19.02	$43.41
Laborers (Class 02 - See notes)	1/1/2016		$24.64	$20.02	$44.66
Laborers (Class 03 - See notes)	1/1/2015		$24.78	$19.02	$43.80
Laborers (Class 03 - See notes)	1/1/2016		$25.03	$20.02	$45.05
Laborers (Class 04 - See notes)	1/1/2015		$25.23	$19.02	$44.25
Laborers (Class 04 - See notes)	1/1/2016		$25.48	$20.02	$45.50
Laborers (Class 05 - See notes)	1/1/2015		$25.64	$19.02	$44.66
Laborers (Class 05 - See notes)	1/1/2016		$25.89	$20.02	$45.91
Laborers (Class 06 - See notes)	1/1/2015		$22.48	$19.02	$41.50
Laborers (Class 06 - See notes)	1/1/2016		$22.73	$20.02	$42.75
Laborers (Class 07 - See notes)	1/1/2015		$25.23	$19.02	$44.25
Laborers (Class 07 - See notes)	1/1/2016		$25.48	$20.02	$45.50
Laborers (Class 08 - See notes)	1/1/2015		$26.73	$19.02	$45.75
Laborers (Class 08 - See notes)	1/1/2016		$26.98	$20.02	$47.00
Operators (Class 01 - see notes)	1/1/2009		$26.38	$14.44	$40.82
Operators (Class 01 - see notes)	1/1/2010		$27.18	$14.99	$42.17
Operators (Class 01 - see notes)	1/1/2011		$27.68	$15.74	$43.42
Operators (Class 01 - see notes)	1/1/2012		$28.08	$16.44	$44.52
Operators (Class 01 - see notes)	1/1/2013		$28.48	$17.14	$45.62
Operators (Class 01 - see notes)	1/1/2014		$29.04	$17.83	$46.87
Operators (Class 01 - see notes)	1/1/2015		$29.59	$18.53	$48.12
Operators (Class 01 - see notes)	1/1/2016		$30.19	$19.18	$49.37
Operators (Class 02 -see notes)	1/1/2009		$26.12	$14.44	$40.56
Operators (Class 02 -see notes)	1/1/2010		$26.92	$14.99	$41.91
Operators (Class 02 -see notes)	1/1/2011		$27.42	$15.74	$43.16
Operators (Class 02 -see notes)	1/1/2012		$27.82	$16.44	$44.26
Operators (Class 02 -see notes)	1/1/2013		$28.22	$17.14	$45.36
Operators (Class 02 -see notes)	1/1/2014		$28.78	$17.83	$46.61
Operators (Class 02 -see notes)	1/1/2015		$29.33	$18.53	$47.86
Operators (Class 02 -see notes)	1/1/2016		$29.93	$19.18	$49.11

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Class 03 - See notes)	1/1/2009		$22.47	$14.44	$36.91
Operators (Class 03 - See notes)	1/1/2010		$23.27	$14.99	$38.26
Operators (Class 03 - See notes)	1/1/2011		$23.77	$15.74	$39.51
Operators (Class 03 - see notes)	1/1/2012		$24.17	$16.44	$40.61
Operators (Class 03 - See notes)	1/1/2013		$24.57	$17.14	$41.71
Operators (Class 03 - See notes)	1/1/2014		$25.13	$17.83	$42.96
Operators (Class 03 - See notes)	1/1/2015		$25.68	$18.53	$44.21
Operators (Class 03 - See notes)	1/1/2016		$26.28	$19.18	$45.46
Operators (Class 03)	1/1/2011		$23.77	$15.74	$39.51
Operators (Class 04 - See notes)	1/1/2009		$22.01	$14.44	$36.45
Operators (Class 04 - See notes)	1/1/2010		$22.81	$14.99	$37.80
Operators (Class 04 - See notes)	1/1/2011		$23.31	$15.74	$39.05
Operators (Class 04 - See notes)	1/1/2012		$23.71	$16.44	$40.15
Operators (Class 04 - See notes)	1/1/2013		$24.11	$17.14	$41.25
Operators (Class 04 - See notes)	1/1/2014		$24.67	$17.83	$42.50
Operators (Class 04 - See notes)	1/1/2015		$25.22	$18.53	$43.75
Operators (Class 04 - See notes)	1/1/2016		$25.82	$19.18	$45.00
Operators (Class 05 - See notes)	1/1/2009		$21.76	$14.44	$36.20
Operators (Class 05 - See notes)	1/1/2010		$22.56	$14.99	$37.55
Operators (Class 05 - See notes)	1/1/2011		$23.06	$15.74	$38.80
Operators (Class 05 - See notes)	1/1/2012		$23.46	$16.44	$39.90
Operators (Class 05 - See notes)	1/1/2013		$23.86	$17.14	$41.00
Operators (Class 05 - See notes)	1/1/2014		$24.42	$17.83	$42.25
Operators (Class 05 - See notes)	1/1/2015		$24.97	$18.53	$43.50
Operators (Class 05 - See notes)	1/1/2016		$25.57	$19.18	$44.75
Painters Class 1 (see notes)	6/1/2009		$27.24	$12.81	$40.05
Painters Class 1 (see notes)	6/1/2010		$27.84	$13.53	$41.37
Painters Class 1 (see notes)	6/1/2011		$27.84	$15.03	$42.87
Painters Class 1 (see notes)	6/1/2012		$29.60	$14.56	$44.16
Painters Class 1 (see notes)	6/1/2013		$30.38	$15.03	$45.41
Painters Class 1 (see notes)	6/1/2014		$30.78	$15.88	$46.66

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Painters Class 1 (see notes)	6/1/2015		$31.18	$16.73	$47.91
Painters Class 1 (see notes)	6/1/2016		$31.58	$17.58	$49.16
Painters Class 1 (see notes)	6/1/2017		$31.98	$18.43	$50.41
Painters Class 2 (see notes)	6/1/2009		$27.77	$12.81	$40.58
Painters Class 2 (see notes)	6/1/2010		$28.38	$13.53	$41.91
Painters Class 2 (see notes)	6/1/2011		$28.38	$15.03	$43.41
Painters Class 2 (see notes)	6/1/2012		$29.60	$14.56	$44.16
Painters Class 2 (see notes)	6/1/2013		$30.38	$15.03	$45.41
Painters Class 2 (see notes)	6/1/2014		$30.78	$15.88	$46.66
Painters Class 2 (see notes)	6/1/2015		$31.18	$16.73	$47.91
Painters Class 2 (see notes)	6/1/2016		$31.58	$17.58	$49.16
Painters Class 2 (see notes)	6/1/2017		$34.08	$18.43	$52.51
Painters Class 3 (see notes)	6/1/2009		$29.81	$12.81	$42.62
Painters Class 3 (see notes)	6/1/2010		$30.48	$13.53	$44.01
Painters Class 3 (see notes)	6/1/2011		$30.48	$15.28	$45.76
Painters Class 3 (see notes)	6/1/2012		$31.70	$14.56	$46.26
Painters Class 3 (see notes)	6/1/2013		$32.48	$15.03	$47.51
Painters Class 3 (see notes)	6/1/2014		$32.88	$15.88	$48.76
Painters Class 3 (see notes)	6/1/2015		$33.28	$16.73	$50.01
Painters Class 3 (see notes)	6/1/2016		$33.68	$17.58	$51.26
Painters Class 3 (see notes)	6/1/2017		$27.58	$18.48	$46.06
Painters Class 4 (see notes)	6/1/2009		$23.79	$12.81	$36.60
Painters Class 4 (see notes)	6/1/2010		$24.38	$13.53	$37.91
Painters Class 4 (see notes)	6/1/2011		$24.38	$14.93	$39.31
Painters Class 4 (see notes)	6/1/2012		$25.36	$14.56	$39.92
Painters Class 4 (see notes)	6/1/2013		$25.98	$15.03	$41.01
Painters Class 4 (see notes)	6/1/2014		$26.31	$15.88	$42.19
Painters Class 4 (see notes)	6/1/2015		$26.63	$16.73	$43.36
Painters Class 4 (see notes)	6/1/2016		$26.95	$17.58	$44.53
Painters Class 4 (see notes)	6/1/2017		$27.27	$18.43	$45.70
Painters Class 5 (see notes)	6/1/2009		$19.28	$12.81	$32.09

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Painters Class 5 (see notes)	6/1/2010		$19.81	$13.53	$33.34
Painters Class 5 (see notes)	6/1/2011		$19.81	$14.67	$34.48
Painters Class 5 (see notes)	6/1/2012		$20.61	$14.56	$35.17
Painters Class 5 (see notes)	6/1/2013		$21.11	$15.03	$36.14
Painters Class 5 (see notes)	6/1/2014		$21.38	$15.88	$37.26
Painters Class 5 (see notes)	6/1/2015		$21.64	$16.73	$38.37
Painters Class 5 (see notes)	6/1/2016		$21.90	$17.58	$39.48
Painters Class 5 (see notes)	6/1/2017		$22.16	$18.43	$40.59
Piledrivers	1/1/2009		$28.85	$12.00	$40.85
Piledrivers	1/1/2010		$29.95	$12.25	$42.20
Piledrivers	1/1/2011		$30.35	$13.10	$43.45
Piledrivers	1/1/2012		$30.85	$13.70	$44.55
Piledrivers	1/1/2013		$31.45	$14.20	$45.65
Piledrivers	1/1/2014		$31.45	$15.45	$46.90
Piledrivers	1/1/2015		$31.74	$16.41	$48.15
Piledrivers	1/1/2016		$32.03	$17.37	$49.40
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2010		$30.27	$26.09	$56.36
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2012		$34.87	$26.86	$61.73
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2013		$36.02	$27.73	$63.75
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2014		$37.19	$28.83	$66.02
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2015		$38.31	$30.08	$68.39

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total

Notes:
If you can not find a classification under Heavy/Highway please refer to the Building classifications.

The Bureau of Labor Law Compliance updated its Pennsylvania Building Journeyperson Laborer Notes to clarify existing tasks performed throughout the Commonwealth. The "Building Laborer Notes" link on the Bureau's website provides a list of those tasks that should be read in conformity with custom and usage of the construction industry in the geographic region in which they are utilized.

For further information on construction types review the "Notes as Referenced in Predeterminations" on the Labor and Industry Website. Go to www.dli.state.pa.us, scroll down to the picture labeled "Labor Law Compliance" and click the picture. Then scroll down on the left menu and click on the "Prevailing Wage" link.

Addendum No. 1

RFP # 16-10495-7252

Cashless Tolling System Implementation and Maintenance

Prospective Respondents: You are hereby notified of the following information in regard to the referenced RFP:

REVISIONS

1. Replace the second paragraph within section 1.4 Problem Statement on page 1 of 35 of the RFP (5 of 1050 in original RFP PDF file) in its entirety with the following:

   The Services include implementation of cashless tolling on the newly constructed Southern Beltway in the 4th quarter of 2019 and the conversion of the Findlay Connector to cashless tolling in February 2018, both of which will be the base Work for this Contract. This will include three (3) locations (one {1} on Findlay Connector and two {2} on Southern Beltway), six (6) Cashless Toll Zones using an anticipated space frame gantry design.

2. Replace Table 1-1 within Section 1.12 on page 5 of 35 of the RFP (9 of 1050 in original RFP PDF file) in its entirety with the following:

ACTIVITY	DATE	TIME
Request for Proposal Issued	February 17, 2016	N/A
Deadline for submission of written questions for the Pre-Proposal Conference	February 29, 2016	5 p.m.
Pre-Proposal Conference	March 2, 2016	1:00 p.m.
Deadline for Proposers to Submit Final Questions	April 6, 2016	1:00 p.m.
Due Date for Proposals	May 4, 2016	2 p.m.
PTC Site Visits of Deployments	TBD	TBD
Oral Clarifications/Presentations	TBD	TBD
Anticipated Notice to Proceed	January 2017	N/A

3. Replace bullet items one and two within section 1.26 Term of Contract on page 10 of 35 of the RFP (14 of 1050 in original RFP PDF file) in its entirety with the following:

   - Implementation Phase – The Implementation Phase shall begin on the Effective Date and shall continue until System Acceptance.

- Maintenance Phase – The Maintenance Phase shall begin upon Acceptance of the Implementation Phase and shall continue through the end of the base Contract term of ten (10) years.

4. Replace Item 2 within Section 2.3 Submission of Technical proposal on page 29 of 35 of the RFP (page 33 of 1050 in original RFP PDF file) in its entirety with the following:

2) One (1) original and five (5) copies of the Technical Proposal shall be submitted by the Proposer. In addition to the hard copies of the proposal, two complete and exact copies of the entire proposal (Technical, Cost and DB submittals, along with all requested documents) on CD/DVD or Flash Drive in Microsoft Office or Microsoft Office-compatible format. The electronic copy must be a mirror image of the hard copy. Six total electronic submissions are required, two copies of the Price Proposal with the Implementation Payment and Performance Bond commitment letter, two copies of the DB submittal and two copies of the technical submittal and all other required information. Proposer should ensure that there is no costing information in the technical submittal. Each CD/DVD or Flash drive should clearly identify the Proposer, which part of the proposal is included and include the name and version number of the virus scanning software that was used to scan the CD/DVD or Flash drive before it was submitted.

5. Replace the first paragraph within section 1.2 Overview of Scope of Work on page 2 of 171 of Exhibit A – Scope of Work (page 50 of 1050 in original RFP PDF file) in its entirety with the following:

In the future, tolls will be collected via non-stop cashless tolling. This will be accomplished via the installation of new gantries (using a multiple gantry option as well as space frame design) over the mainline of the various Turnpike highways. The mainline toll points will consist of sites with either a multiple span gantry design or a space frame design option. The baseline Contract for this Scope of Work will be the newly constructed Southern Beltway in the 4th quarter of 2019 and the conversion of the Findlay Connector in February 2018, both of which will be the base Work for this Contract. This will include three (3) tolling locations (one {1} on Findlay Connector and two {2} on Southern Beltway) in each direction for a total of six (6) cashless toll zones using an anticipated space frame gantry design.

6. Replace the last bullet of requirement #708 within section 5.1.1 Program Management Plan on page 94 of 171 of Exhibit A – Scope of Work (page 141 of 1050 in original RFP PDF file) in its entirety with the following:

- an emergency contact list as described further below in requirement #720.

7. Replace requirement #735 within section 5.1.7 Project Schedule on page 98 of 171 of Exhibit A – Scope of Work (page 145 of 1050 in original RFP PDF file) in its entirety with the following:

   The Project Implementation schedule shall identify the anticipated Go-Live date of February 24, 2018 for the conversion of the Findlay Connector and the 4th quarter of 2019 for the newly constructed Southern Beltway.

8. Replace requirement #1078 within section 7.7 Maintenance Coverage and Response Times on page 153 of 171 of Exhibit A – Scope of Work (page 200 of 1050 in original RFP PDF file) in its entirety with the following:

   Response to calls and repair times shall be determined by priority as described below. Contractor failure to meet the response and repair time criteria described below (requirement #1080) shall result in liquidated damages as specified in Section 7.22.

9. Replace Exhibit C – Price Proposal Instructions in its entirety with the revised Exhibit C – Price Proposal Instructions – Addendum #1 03-08-2016 provided as attached to this addendum.

10. Replace Exhibit D – Payment Schedule in its entirety with the revised Exhibit D-Payment Schedule – Addendum #1 03-08-2016 provided as attached to this addendum.

11. Replace Exhibit E – Project Implementation Schedule in its entirety with the revised Exhibit E - Project Implementation Schedule – Addendum #1 03-08-2016 provided as attached to this addendum.

12. Replace Exhibit F-6 - Requirements Conformance Matrix in its entirety with the revised Exhibit F-6 - Requirements Conformance Matrix – Addendum #1 03-08-2016 provided as attached to this addendum. Electronic file is also provided.

13. Replace Exhibit F-7 - Price Proposal in its entirety with the revised Exhibit F-7 - Price Proposal – Addendum #1 03-08-2016 provided as attached to this addendum. Electronic file is also provided.

ADDITIONS

1. The Pre-Proposal Meeting sign in sheet and attendee business cards (where provided), is provided as additional information only attached as part of this addendum.

QUESTIONS AND ANSWERS

Following are the answers to questions submitted in response to the above referenced RFP as of February 29, 2016. All of the questions have been listed, as received by the Pennsylvania Turnpike Commission.

#	Page	Section	Section Description	Proposer Question	Commission Response
1	33 of 1050	2.3	Submission of Technical Proposal	In the requirements for the Technical Proposal submittal, bullet two requires "two complete and exact copies of the entire proposal (Technical, Cost and DB submittals, along with all requested documents) on CD/DVD". Please verify that the Technical Proposal CD should not include the Cost or DB submittal.	Correct. The electronic submissions (two copies each) are separate. Two copies of the electronic submission of the technical proposal, two copies of the electronic submission of the diverse business proposal and two copies of the electronic submission of the price proposal. So six total electronic submissions. Bullet 2 has been revised to clarify, see Revision #4 above for more details.
2	773 of 1050 861 of 1050	Exhibit F-6 Exhibit F-7	Requirements Conformance Matrix Price Proposal	Please provide the Requirements Conformance Matrix and the Pricing Proposal in Excel format.	A link to the Requirements Conformance Matrix and Pricing Proposal in Excel format, as well as other writable files can be found within the full pdf downloaded from the PTC website. Simply click on the "attachments" tab (illustrated by the paper clip on the left navigation panel) and select the document in question. Note: Both the Requirements Conformance Matrix and the Price Proposal Exhibits have been updated; see Revision #12 and #13 above.
3	759 of 1050	Exhibit E	Project Implementation Schedule	Please confirm that the Preliminary Project Implementation Schedule should cover only the initial three tolling locations.	Correct Note: The implementation schedule has been modified and the Exhibit has been updated and included, see Revision #11 above.

4	9 of 1050	Table 1-1	Front End	We would like to formally request an extension of the April 13th proposal due date by 30 days to May 13th, 2016 We are requesting this time in order to provide all of the information requested in the RFP.	The proposal due date has been revised to May 4, 2016. See Revision #2 above for more details.

All other terms, conditions and requirements of the original RFP dated February 17, 2016 remain unchanged unless modified by this Addendum.

Exhibit C
Price Proposal Instructions

Table of Contents

1. GENERAL INSTRUCTIONS

Proposers shall complete their Price Proposals in accordance with the following instructions:

1. The Price Proposal Forms are provided in Excel format worksheets for ease of completion and checking. The Excel version of the Price Proposal shall be downloaded from the Commission's Website at: www.paturnpike.com/procurement.

2. Proposers shall submit their Price Proposals on the Price Proposal Forms included in RFP, Exhibit F - Forms. Price Proposals shall be sealed and submitted separate from the Technical Proposal as further instructed in the RFP. Price Proposals shall be submitted in the quantities and manner identified in the RFP.

3. The Price Proposal Forms shall constitute the full and complete Price Proposal for compensation for performance of the Contractor's obligations and Work under the Cashless Tolling System Project.

4. Proposers must complete the Price Proposal Forms in their entirety. The Price Proposal Forms for the Project are as follows:

    - **Cashless Tolling System Implementation and Maintenance Cost** – Sheet 1
    - **In-lane System Cost** – Sheets 2, 2-1 and 2-2
    - **Toll Host/System Cost** – Sheets 3, 3-1, 3-2 and 3-3
    - **In-lane System Hardware Maintenance and Software Support Services Cost** – Sheets 4, 4-1, 4-2 and 4-3
    - **Toll Host/System Maintenance and Software Support Services Cost** – Sheets 5, 5-1 and 5-2
    - **Future System Implementation and Maintenance Cost** – Sheets 6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 and 6-9
    - **Additional Services Rates** – Sheet 7-1
    - **Payment Schedule** – Exhibit D

5. Proposers should not fill in any grayed-out cells on the Price Proposal Forms, nor shall Proposers make any other entry on or alteration to the Price Proposal Forms other than in accordance with these Price Proposal Instructions.

6. The Commission may waive or correct any error appearing in a Proposer's completed Price Proposal Forms if the correct amount can be clearly ascertained from the information provided; however, the Commission is under no obligation to do so. In the event of an inconsistency between the amount stated in numbers and the amount stated in written words, the amount stated in written words will control. In the event of a mathematical miscalculation, the correct sum will control.

7. An officer of the Proposer or an individual otherwise authorized in writing by an officer of the Proposer must sign and date Sheet 1 in the appropriate place as identified.

8. All elements of the Price Proposal must be completed. If zero quantities are included for a line item in the Proposal, a zero must be entered into the corresponding cell. In addition, all items

identified by the Commission in the Price Proposal Forms will be assumed to be included in the Price Proposal.

9. The Commission reserves the right to reject Price Proposals that are not completed in accordance with the instructions set forth herein.

10. Instructions for completion of each of the Price Proposal Forms are provided in Sections 2 through 12 below.

11. The Price Proposal shall be inclusive of all costs, fees and applicable taxes needed to meet the requirements of the RFP, including the **Exhibit A, Scope of Work**. **All costs should be entered in 2016 dollar values.** No price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.

2. INSTRUCTIONS ON COMPLETING THE PRICE PROPOSAL FORMS

1. There are twenty-six (26) Price Proposal Forms, as detailed above, including six pricing summary sheets (Sheets 1, 2, 3, 4, 5 and 6) and associated back-up information on back-up sheets for each pricing sheet. Back-up sheets for each summary sheet are labeled to identify the corresponding summary pricing sheet; for example, Sheet 2-1 is a back-up sheet to pricing Sheet 2. Back-up sheets are located following summary sheets 1 through 6. The Additional Services Rates Sheet 7-1 is a standalone sheet and does not require a summary sheet.

2. Table 1 summarizes the 26 Price Proposal forms that shall be completed by all Proposers. Each form is located on a unique sheet in an Excel workbook. The table provides the following information for each form:

    a. The sheet number (e.g. 2, 2-1, etc.)

    b. The sheet identifier listed on the tab in Excel

    c. The sheet title listed at the top of each sheet

Table 1 – Price Proposal Form Summary

Sheet Number	Sheet Identifier	Sheet Title
1	Project Summary	PTC Cashless Tolling System Implementation and Maintenance Cost
2	In-lane Sum	Base and Optional In-lane System Cost by Roadway
2-1	Backup In-Lane	Back-up Base and Optional In-lane System Cost Schedule
2-2	Backup In-Lane Staff	Back-up In-lane System – Staff and Position Classifications with Rates
3	Host System Sum	Toll Host/System Cost
3-1	Backup Host System	Back-up Toll Host/System Cost Schedule
3-2	Backup In-Lane-Host-Spares	Back-up In-Lane System and Toll Host/System Spares Cost Year 1
3-3	Host System Staff	Back-up Toll Host/System – Staff and Position Classifications with Rates
4	In-Lane Sys Hdw SW Maint	Base and Optional In-lane System Hardware Maintenance and Software Support Services Cost
4-1	Backup In-Lane System Maint	Back-up Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
4-2	Backup Lane Hdw Maint	Back-up Base and Optional In-lane System Hardware Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
4-3	Backup In-Lane Maint Staff	Back-up Base and Optional In-lane System Hardware Maintenance and Software Support Services – Staff and Position Classifications with Rates
5	Toll Host Sys SW Maint	Base and Optional Toll Host/System Maintenance and Software Support Services Cost
5-1	Backup Host Sys SW Maint	Back-up Base and Optional Toll Host/System Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
5-2	Backup Host Maint Staff	Back-up Base and Optional Toll Host/System Maintenance and Software Support Services – Staff and Position Classifications with Rates
6	Future Pricing	Optional Future Facilities System Implementation and Maintenance Cost
6-1	Future Implement Cost	Back-up Optional Future Pricing Cashless Tolling System Implementation Cost
6-2	Future Impl Zone Detail	Back-up Optional Future Pricing by Zone by Type
6-3	Future Impl Staff	Back-up Optional Future Pricing by Zone and Type – Staff and Position Classifications with Rates
6-4	Future Host Cost	Back-up Optional Incremental Host System Cost
6-5	Future In-lane Maint	Back-up Optional Future In-lane System Hardware Maintenance and Software Support Services
6-6	Future In-lane Detail	Back-up Optional Future In-Lane System Hardware Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
6-7	Future In-lane Staff	Back-up Optional Future In-lane System Hardware Maintenance and Software Support Services – Staff and Position Classifications with Rates
6-8	Future Host Mainten	Back-up Optional Future Toll Host/System Maintenance and Software Support Services – Labor and Other Direct Cost Items by Month
6-9	Future Host Maint Staff	Back-up Optional Future Toll Host/System Maintenance and Software Support Services – Staff and Position Classification with Rates
7-1	Additional Services Rates	Additional Services Rates (2016 Values)

Exhibit D	Payment Schedule

3. The Price Proposal Forms are password protected and shall not be unlocked by Proposers. Only the unlocked cells may the Proposers enter data.
4. Blue colored tabs represent summary sheets that do *not* require Proposer input. Green tabs represent worksheets that require Proposer input.
5. On most sheets there are formulas that are automatically calculated based on data entered from elsewhere in the sheet or work book. Font and background colors are used to indicate different types of cells as follows:
    - Black font – Indicates the cell cannot be altered by Proposer.
    - Red font – Indicates the Proposer should enter data.
    - Light red background – Indicates input required. All such cells should be completed accordingly.
    - Light yellow background – Indicates optional input, if Proposers need to provide additional detail.
    - Light green background – Indicates that data has been entered into the cell. Light red and light yellow background will change to light green when any non-zero data is entered. The background for any cells where the Proposer enters zero (0) will not change colors in this manner.
6. While the Commission has made every effort to ensure the Price Proposal Forms contain accurate formulas and calculation, Proposers are required to independently verify that formulas and calculations are being performed correctly.

3. TOTAL PROJECT COSTS

The Proposer's proposed total price shall be the aggregate of all costs included in Sheet 1. Sheet 1 will automatically roll-up and present the totals from Sheets 2 through 6. These costs will be totaled and presented in the Grand Total Cost column in the line entitled Total Implementation and Maintenance Phase with Optional Functionality and Optional Extension Phases.

4. COMPLETION OF IN-LANE SYSTEM COST SUMMARY - SHEETS 2, 2-1 AND 2-2

The Proposer's total price for the In-lane System (roadway) portion of the Implementation Phase shall be the aggregate of all costs included in Sheet 2 which covers all costs associated with the In-lane System portion of the Work for the Southern Beltway/Findlay Connector.

The costs for Sheet 2 shall include (without limitation) all Equipment, supplies, Software, parts and materials, overhead, burden, profit, taxes, duties, fees, Contractor-acquired permits, licenses, warranties, and other items necessary to meet the Contractor contractual requirements associated with the In-Lane portion of the System. No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete the Work except as set forth in Section 12.

The prices on Sheet 2 and related back-up sheets shall not include charges and costs associated with the Host System or the Maintenance Phase. These costs shall be provided on separate Price Proposal Sheets as described below.

To complete Sheets 2 and 2-1 Proposers should do the following:

1. **Sheet 2-1**. In the columns provided under each cost component (Items 1-8) and the Facility Server, enter a description for each price element for each component in as much detail as space allows. Moving to the right in the 2nd column (B) enter the quantity for each item and in the 3rd column (C) enter the unit costs. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 2.

   Complete the cost data for the Optional OCR/ALPR and Enforcement Notification for the Southern Beltway and Findlay Connector by entering a description for each price element for this option in as much detail as space allows. Moving to the right in the 2nd column (B) enter the quantity for each item and in the 3rd column (C) enter the unit costs. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 2.

2. **Sheet 2**. This sheet will be automatically populated from Sheet 2-1. No Proposer input is required.

3. **Sheet 2-2**. Enter specific names for the Key Team positions (Items 1-7) for In-lane System labor costs related to the Implementation Phase. Enter their specific loaded labor rate in the rate column and their number of hours. Moving down the sheet, enter additional labor categories for all labor to be used to complete this Work, including rates and hours. The staff names are not required for these additional positions (i.e. the positions that are not highlighted in red). The total labor dollars will be calculated for each staff person and labor category and a grand total will be calculated. The labor dollar grand total must match the Total with Facility Server on Sheet 2-1. A labor check cell is provided to assist Proposers with verifying that the two (2) labor totals are equal.

5. COMPLETION OF TOLL HOST/SYSTEM COST - SHEETS 3, 3-1, 3-2 AND 3-3

The Proposer's proposed total price for the Toll Host/System portion of the Implementation Phase shall be the aggregate of all costs included in Sheet 3. This sheet covers all costs associated with the Toll Host/System and non-roadway specific costs for the Southern Beltway/Findlay Connector, to complete the implementation, such as project management, engineering and Design, Software, Testing. Additionally, Sheet 3 includes the Warranty Year for the In-lane System Hardware Maintenance and Software Support Services and the Warranty Year for the Toll Host/System Maintenance and Software Support Services which is carried forward from the Maintenance Summary in Sheets 4 and 5 respectively. The cost for these items are included in the Total Toll Host/System Costs in Sheet 3 and although they are

shown as a line item in Sheets 4 and 5 respectively, they are not included in the total in Sheets 4 and 5 for the respective Maintenance category.

The Toll Host/System cost shall include all costs for items identified in line items 1 through 19 of Sheet 3 associated with the Toll Host/System cost component. The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, and other items necessary for the Contractor to complete the Work. The costs shall also include (without limitation) all Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and other items necessary to meet the Contractor contractual requirements associated with the Toll Host/System Cost. No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete this Work except as set forth in Section 12.

With the exception of including the Year 1 warranty Maintenance costs, the prices on Sheet 3 and related back-up shall not include charges and costs associated with the Lane System or Maintenance Phase. These costs shall be set forth on separate Price Proposal Forms as described in Section 2 above and Section 6 and 7 below.

Proposers shall complete Sheets 3, 3-1, 3-2 and 3-3 as follows:

1. **Sheet 3-2.** This sheet includes Spare Parts costs for Year 1 Equipment items. In the columns provided under each cost component (Items 1-8 for In-lane and Items 1-2 for Toll Host), enter the total quantity in the 2nd column (B) for each listed element required during the Warranty Year. If the item is provided as a lump sum, the quantity should be shown as 1. Moving to the right in the 3rd column (C), enter the unit cost for each item. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total quantity and unit cost as described above. Total item costs will be calculated automatically for each item. The Total Spare Cost Warranty Year (Year 1) In-lane System and Toll Host/System will then automatically be calculated and shown in the appropriate line item within item 15 on Sheet 3-1.

2. **Sheet 3-1**. This sheet provides back up for Sheet 3 cost components 1-12 and 16-19. Enter a description for each cost component in as much detail as space allows. If there are costs other than labor costs that are not included or are not already listed, enter such unit quantities and unit costs. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 6th column (F), enter the labor costs associated with each of the price elements. Please note the following regarding Sheet 3-1:

    - Line item 13 (Warranty First Year of Operation – In-lane System Hardware Maintenance and Software Support Services) is automatically populated from Sheet 4, line item 1.
    - Line item 14 (Warranty First Year of Operation – Toll Host/System Maintenance and Software Support Services) is automatically populated from Sheet 5, line item 1.
    - Line item 15 (Spare Parts and Equipment Year 1 – Warranty Year) is automatically populated from Sheet 3-2.

    The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 3.

3. **Sheet 3.** This sheet is automatically populated from Sheet 3-1. No Proposer input is required.

4. **Sheet 3-3.** Enter specific names for the Key Team positions (Items 1-7) for the Toll Host/System labor costs. Enter the specific loaded labor rate for each staff member in the rate columns and their number of hours for Toll Host/System. Moving down the sheet, enter additional labor categories for all labor to be used to complete this Work, including rates and hours. For positions listed beyond item 7, staff names are not required. The total labor dollars will be calculated for each staff person and labor category and a grand total will be calculated. The labor dollar grand total must match the total labor dollars total on Sheet 3-1. A labor check cell is provided on the bottom of Sheet 3-1 to assist Proposers with the verification that the two (2) labor totals are equal.

6. COMPLETION OF IN-LANE SYSTEM HARDWARE MAINTENANCE AND SOFTWARE SUPPORT SERVICES COST (BASE AND OPTIONAL) SHEETS 4, 4-1, 4-2 AND 4-3

The Proposer's proposed total price for the In-lane System Hardware Maintenance and Software Support Services shall be the aggregate of all costs included in Sheet 4. This sheet covers all costs to be paid for by the Commission for the Maintenance of the In-Lane System, including optional Work.

The costs shall include (without limitation) all Contractor management, administrative and support labor costs, as well as all direct costs associated with maintaining the In-Lane system. The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and all other items necessary to meet the Contractor contractual requirements associated with the In-Lane System Maintenance. All labor rates provided are to include overhead, burden and profit ("Loaded Labor Rate"). No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete the Work, except as provided in Section 12.

Proposers shall complete Sheets 4, 4-1, 4-2 and 4-3 as follows:

1. **Sheet 4-2**. For the Base Contract for Maintenance (Years 1–9), as well as for Optional Extension 1 (Years 1-5) and Optional Extension 2 (Years 1-5), each year is identified with a corresponding set of Work elements. Starting in column (B), enter the monthly per-zone cost associated with each price element. (Please note that the monthly labor cost per zone is automatically populated from Sheet 4-3 and therefore requires no input from the Proposer.) Include all other direct, non-labor costs required for each price element. The Total Monthly costs for each year will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 4-1.
2. **Sheet 4-1.** This sheet is automatically populated from Sheet 4-2; it requires no input from the Proposer.
3. **Sheet 4**. This sheet is automatically populated from Sheet 4-1; it requires no input from the Proposer.
4. **Sheet 4-3**, the Proposer shall do the following:
    - Enter specific names for the Key Team positions (Items 1-7) required for the Maintenance Phase.
    - Moving down the sheet, enter the names of additional labor categories for all labor to be used. Staff names are not required for these additional positions.

- Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column.
- For evaluation purposes the Maintenance Year 1 Rate will automatically be populated based on the 2016 Loaded Labor Rate and applying an assumed annual escalation rate. For purposes of the evaluation an estimated Consumer Price Increase (CPI) increase of 3% per year has been used, assuming Maintenance Phase Work will begin in Year 2 of the Contract.
- Next, enter the annual number of hours for each position/classification required for all zones for Year 1, Year 2 and Year 3. This worksheet assumes that Year 3 labor hours will remain consistent for the duration of the base and optional extension(s) Maintenance years. Labor rates for Maintenance Years 2 through 9 and Optional Extension 1 and 2 will then automatically populated using an assumed annual escalation of 3% from the previous year for evaluation purposes. Note that the actual labor price adjustments will be determined as described in Section 12.
- The total labor dollars will be calculated for each staff person and labor category for Years 1 through 9 and each year of the Optional Extensions periods. A grand total will be calculated for each year. The Total Monthly Per Zone Cost for each year will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 4-2.

7. COMPLETION OF TOLL HOST/SYSTEM MAINTENANCE AND SOFTWARE SUPPORT SERVICES COST SHEETS 5, 5-1 AND 5-2

The Proposer's proposed total price for the Toll Host/System Maintenance and Software Support Services shall be the aggregate of all costs included in Sheet 5. This sheet covers all costs to be paid for by the Commission as part of the Maintenance Phase for the Toll Host/System.

The costs shall include (without limitation) all Contractor management, administrative and support labor costs, as well as all direct costs associated with maintaining the Toll Host/System. The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and all other items necessary to meet the Contractor contractual requirements associated with the Toll Host/System Maintenance. All labor rates provided are to include overhead, burden and profit ("Loaded Labor Rate"). No price escalation will be allowed above the costs provided on the Price Proposal Sheets to complete the Work, except as provided in Section 12.

Proposers shall complete Sheets 5, 5-1, and 5-2 as follows:

1. Sheet 5-1. For the Base Contract for Maintenance (Years 1–9), as well as for Optional Extension 1 (Years 1-5) and for Optional Extension 2 (Years 1-5), each year is identified with a corresponding set of Work elements. Starting in column (B), enter the monthly per-zone cost associated with each price element. Starting in the 2nd column (B), enter the monthly quantity for each item. In the 3rd column (C) enter the unit cost. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all

additional items entered, the Proposer must also enter the total monthly quantity and unit cost as described above. Include all monthly labor costs and other direct, non-labor costs required for each price element. The costs for each price element will then automatically be calculated and the summary will be shown in the appropriate line item on Sheet 5.

2. **Sheet 5.** This sheet is automatically populated from Sheet 5-1; it requires no input from the Proposer.

3. **Sheet 5-2**. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) to be used for these Toll Host/System Maintenance and Software Support Services.
   - Moving down the sheet, enter the names of additional labor categories for all labor to be used for these Toll Host/System Maintenance and Software Support Services. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column for the Toll Host/System Maintenance and Software Support Services.
   - For evaluation purposes, the Maintenance Year 1 Rate will automatically be populated from the 2016 Loaded Labor Rate using an escalation of 3% per year and assuming work will begin in Year 2 of the Contract. Labor rates for Maintenance Years 2 through 9 and Optional Extension 1 and 2 will automatically be populated using an escalation of 3% from the previous year. An estimated CPI Composite of 3% has been used for evaluation purposes only. The actual price adjustments will be determined as described in Section 12. No price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.
   - For evaluation purposes the Maintenance Year 1 Rate will automatically be populated based on the 2016 Loaded Labor Rate and applying an assumed annual escalation rate. For purposes of the evaluation an estimated Consumer Price Increase (CPI) increase of 3% per year has been used, assuming Maintenance Phase Work will begin in Year 2 of the Contract.
   - Next, enter the annual number of hours for each position/classification required for the Toll Host/System Maintenance and Software Support Services for Year 1 and Year 2. This worksheet assumes that Year 2 labor hours will remain consistent for the duration of the base and optional extension(s) Maintenance years. Labor rates for Maintenance Years 2 through 9 and Optional Extension Years 1 and 2 will then automatically populate using an assumed annual escalation of 3% from the previous year for evaluation purposes. Note that the actual labor price adjustments will be determined as described in Section 12.
   - The total labor dollars will be calculated for each staff person and labor category for Years 1 through 9 and each year of the Optional Extensions periods. A grand total will be provided for each year. This labor dollar total must match the total labor dollars for each year on Sheet 5-1. A labor check cell is provided on the right-hand column of Sheet 5-1 to assist Proposers with verifying that the two labor totals are equal.

8. COMPLETION OF OPTIONAL FUTURE FACILITIES SYSTEM IMPLEMENTATION AND MAINTENANCE COST SHEETS 6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 AND 6-9

The Proposer's total price for the Optional Future Facilities System Implementation and Maintenance Cost portion of the Contract shall be the aggregate of all costs included in Sheet 6. This sheet covers all costs to be paid for by the Commission for a common potential scenario of optional future facility (ies) implemented during the term of the Contract for the purposes of evaluation.

The total price shall include (without limitation) all overhead, burden, profit, taxes, duties, fees, warranties, Equipment, supplies, Software, parts and materials, Contractor-acquired permits, licenses, warranties, and all other items necessary to meet the Contractor contractual requirements of the Implementation and Maintenance of any optional facilities

Proposers shall complete Sheets 6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 and 6-9 as follows:

1. Sheet 6-2. In the rows provided under each zone type, enter the quantity for each item in the Quantity per Toll Zone column and enter the unit cost in the Units ($) column. If the item is provided as a lump sum, the quantity should be shown as 1. If additional items are required to be included under each zone type provided by the Proposer, enter each element name using the additional spaces provided under the appropriate zone section. For all additional items entered, the Proposer must also enter the total zone quantity and unit cost as described above. In the rows provided under the headings labeled *Facility Server* and *Optional OCR/ALPR and Enforcement Notification*, enter the quantity for each item in the Quantity per Toll Zone column and enter the unit cost in the Units ($) column. (Note: Proposers may select to provide a lump sum Host Cost for the Optional OCR/ALPR and Enforcement Notification and/or provide pricing for Optional OCR/ALPR and Enforcement Notification – Per Zone Cost depending on their solution offered.) If the item is provided as a lump sum, the quantity should be shown as 1. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total zone quantity and unit cost as described above. After completing these items, move to the 5th column (E) and enter the labor costs associated with each of the price elements. Include all monthly labor costs and other direct, non-labor costs required for each price element. The costs for each price element will automatically be calculated and the summary cost will be shown in the appropriate line item on Sheet 6-1.

2. Sheet 6-3. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) required for the Optional Future Pricing by Zone and Type.
   - Moving down the sheet, enter the names of additional labor categories for all labor to be used for the Optional Future Pricing by Zone and Type. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column for the Optional Future Pricing by Zone and Type.

- Enter the annual number of hours for each position/classification required for each zone type for the Optional Future Pricing by Zone and Type.

The total labor dollars will be calculated for each staff person and labor category for each zone type. The Total Labor Cost for each zone type will automatically be calculated and the summary will be shown in the appropriate line item on Sheet 6-1.

3. Sheet 6-4. This sheet contains a corresponding set of components by zone order quantity. Enter the Incremental Host System Cost associated with each of the price elements for a zone with a total order quantity of 1-9 zones, 10-19 zones, 20-29 zones, 30 -39 zones, and 40 or more zones ordered. Include all labor costs and other direct, non-labor costs required for each price element. The costs for each price element will automatically be calculated. A Total Incremental Host Cost will be calculated based on the number of zones ordered in a given year and the summary will be shown in the appropriate line item on Sheet 6-1.
4. Sheet 6-1. This sheet is automatically populated from Sheets 6-2 and 6-4. However, in cells B20 – B23, the proposer may provide a volume discount based on zone quantities ordered in a year. A volume discount percentage may be entered for 10–19 zones, 20–29 zones, 30-39 zones, and over 40 zones. The volumes discount will automatically be incorporated into the calculation in row 12 of this sheet.
5. Sheet 6-6. For the Base Contract Future Maintenance Costs for Maintenance (Years 1–6), as well as for Optional Extension 1 (Years 1-5) and for Optional Extension 2 (Years 1-5), each year for the Optional Future In-lane System Hardware Maintenance and Software Support Services is grouped and contains a corresponding set of components. In column (B), enter the monthly per zone cost associated with each price element. Include all costs and other direct, non-labor costs required for each price element. (Note that the monthly labor cost per zone is automatically populated from Sheet 6-7 in the appropriate space provided.) The Total Monthly costs by zone for each year will automatically be calculated and the summary will be shown in the appropriate line item on Sheet 6-5.
6. Sheet 6-5. This sheet is automatically populated from Sheet 6-6; no Proposer input is required.
7. Sheet 6-7. Proposers shall do the following:
   - Enter specific names for the Key Team positions (Items 1-7) required for the Optional Future In-lane System Hardware Maintenance and Software Support Services portion of the Maintenance Phase.
   - Moving down the sheet, enter the names of additional labor categories for all labor to be used for these Optional Future In-lane System Hardware Maintenance and Software Support Services. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column.
   - NOTE: For evaluation purposes, the Maintenance Year 1 Rate will automatically be populated from the 2016 Loaded Labor Rate using an escalation of 3% per year and assuming Maintenance will begin in Year 5 of the Contract. Labor rates for Maintenance Years 2 through 6 and Optional Extension 1 and 2 will be automatically populated using an escalation of 3% from the previous year. An estimated CPI Composite of 3% has been used for

evaluation purposes only. The actual price adjustments will be determined as described in Section 12. Additionally no price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.

- Enter the annual number of hours for each position/classification required per zone for the Optional Future In-lane System Hardware Maintenance and Software Support Services for Year 1 and Year 2. This worksheet assumes that Year 2 labor hours will remain consistent per zone for the duration of the Optional Future In-lane System Hardware Maintenance and Software Support Services portion of the contract and the Extension periods of the contract.
- The total labor dollars will be calculated for each staff person and labor category for Years 1 through 6 and each year of the Optional Extension periods. A grand total will be calculated per zone for each year. The Total Monthly per Zone Cost for each year will then be calculated and the summary will be shown in the appropriate line item on Sheet 6-6.

8. Sheet 6-8. For the Base Contract for Maintenance (Years 1–6), as well as for Optional Extension 1 (Years 1-5) and for Optional Extension 2 (Years 1-5), each year for the Toll Host/System Maintenance and Software Support Services is grouped and contains a corresponding set of components. Starting in the 2nd column (B), enter the monthly quantity for each item and in the 3rd column (C) enter the unit cost. If the item is provided as a lump sum, the quantity should be shown as 1. Total item costs will be calculated automatically. Moving to the right, in the 5th column (E), enter the labor costs associated with each of the price elements. If additional items are required to be included under each component provided by the Proposer, enter each element name using the additional spaces provided under the appropriate component section. For all additional items entered, the Proposer must also enter the total monthly quantity and unit cost as described above. Include all monthly labor costs and other direct, non-labor costs required for each price element. The costs for each price element will be calculated and the summary will be shown in the appropriate line item on Sheet 6.

9. Sheet 6-9. Proposers shall do the following:

   - Enter specific names for the Key Team positions (Items 1-7) required for the Optional Future Toll Host/System Maintenance and Software Support Services portion of the Maintenance Phase.
   - Enter the names of additional labor categories for all labor to be used for these Optional Future Toll Host/System Maintenance and Software Support Services. Staff names are not required for these additional positions.
   - Enter the 2016 specific loaded labor rate for each Key Team staff member and labor category in the 2016 Loaded Labor Rate column for the Optional Future Toll Host/System Maintenance and Software Support Services.
   - For evaluation purposes the Maintenance Year 1 Rate will automatically be populated from the 2016 Loaded Labor Rate using an escalation of 3% per year and assuming Maintenance will begin in Year 5 of the Contract. Labor rates for Maintenance Years 2 through 6 and Optional Extension 1 and 2 will automatically populated using an escalation of 3% from the previous year. An estimated CPI Composite of 3% has been used for evaluation purposes only. The actual price adjustments will be determined as described in Section 12.

Additionally, no price escalation will be allowed above the costs provided on the Price Proposal Forms to complete the Work, with the exception of the CPI as specifically identified herein.

- Enter the annual number of hours for each position/classification required for the Optional Future Toll Host/System Maintenance and Software Support Services for all years including Optional Extension 1 and 2 for the duration of the Optional Future Toll Host/System Maintenance and Software Support Services portion of the contract and the Extension periods of the contract. Costs by year are available for entry to allow for consideration of volume of toll zones in any given year if a factor for these costs.
- The total labor dollars will be calculated for each staff person and labor category for Years 1 through 6 and each year of the Optional Extensions periods. A grand total will be provided for each year. This labor dollar total must match the total labor dollars for each year on Sheet 6-8. A labor check cell is provided on the right-hand column of Sheet 6-8 to assist Proposers with verifying that the two labor totals are equal.

10. Sheet 6. This sheet is automatically populated from Sheets 6-1, 6-5 and 6-8. No Proposer input is required.

9. COMPLETION OF ADDITIONAL SERVICES RATES - SHEET 7-1

On Sheet 7-1, the Proposer shall provide a listing of staff positions and loaded hourly labor rates for the purpose of providing pricing for future Work not currently included in Exhibit A, Scope of Work. All changes to the Contract involving labor shall use the hourly labor rates in this table. All hourly labor rates shall be stated for the year 2016 and shall be inclusive of burden/overhead and profit. Hourly labor rates shall be adjusted based on changes to the CPI for the previous year beginning with Maintenance Year 2 as described below.

The Proposer shall also provide the current associated Overhead including burden and Profit rates in the cells identified.

10. COMPLETION OF PAYMENT SCHEDULE – EXHIBIT D

The Payment Schedule sheet applies the Implementation Costs to payment milestones and associated percentages shown in RFP Exhibit D Payment Schedule. The sheet takes the total Proposer's Implementation price shown on Sheets 2 and 3 and multiplies it by the percentage associated with each payment milestone. The result is a dollar amount to be paid for each milestone.

11. COMPLETION OF PROJECT SUMMARY - SHEET 1

Sheet 1 will automatically summarize the costs and pricing detailed in Sheets 2 through 6. These costs will be totaled and presented in the line entitled Total Implementation and Maintenance Phase with Optional Functionality and Optional Extension Phases.

To complete Sheet 1, Proposers must do the following:

1. An officer of the Proposer or an individual otherwise authorized in writing by an officer of the Proposer is required to enter the price written out in words for the Grand Total Cost
2. The sheet will need to include a signature and date, along with the authorized officer's name, title, address and phone number.

12. COST ESCALATION

Pricing that is noted above as subject to adjustment shall be adjusted up or down from the Proposal pricing using the following Bureau of Labor Statistics' (BLS) Employment Cost (CPI) indices as applicable:

CPI: CUUR0400SA0 Consumer Price Index - All Urban Consumers; West Urban All Items

NOTE: The above index names and numbers were obtained from the Bureau of Labor Statistics (BLS) and were current as of the date this RFP was written. In the event that the BLS updates an index name or number, the Commission shall consult the BLS web site to determine the new name and number of the index. More information about the index can be found on the U.S. Bureau of Labor's website (see http://www.bls.gov/cpi/).

For the purposes of the price proposal calculations, an assumed rate has been included. Adjustments shall be made to future prices based on actual CPI (Labor) for each applicable year. The basis for calculating the actual CPI to be applied shall be as follows:

1. Annual adjustment to prices shall be made using the anniversary date of start of the Maintenance Phase at which each new Maintenance year begins.
2. In the first applicable year for adjustments (Year 1 of the Maintenance Phase) the reference for the adjustment calculation shall be the 2016 Loaded Labor Rate provided by Proposers.

The assumed CPI index for evaluation purposes has been applied to the following Cost Worksheets ONLY:

1. Sheet 4 (including back-up sheets 4-1, 4-2 and 4-3);
2. Sheet 5 (including back-up sheets 5-1and 5-2);
3. Sheet 6 (including back-up sheets 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 6-8 and 6-9);
4. Sheet 7-1

Adjustments shall be made to future prices in the above sheets based on actual CPI (Labor) for each applicable year. The basis for calculating the actual CPI to be applied shall be as follows:

1. Annual adjustment to prices shall be made using the anniversary date of start of the Maintenance Phase at which each new Maintenance year begins.
2. In the first applicable year for adjustments (Year 1 of Maintenance and Software Support Services) the reference period for the adjustment calculation shall be the 2016 Loaded Labor Rate.
3. For the subsequent applicable years of Maintenance and Software Support Services, as well as for Optional Extension 1 (Extension Years 1-5) and for Optional Extension 2 (Extension Years 1-5),

the CPI adjustments shall be applied against the previous reference year. For example, Maintenance and Software Support Services pricing shall be adjusted using the index change from Maintenance Year 1 as a reference point for adjusting each of the pricing elements identified in the above table).

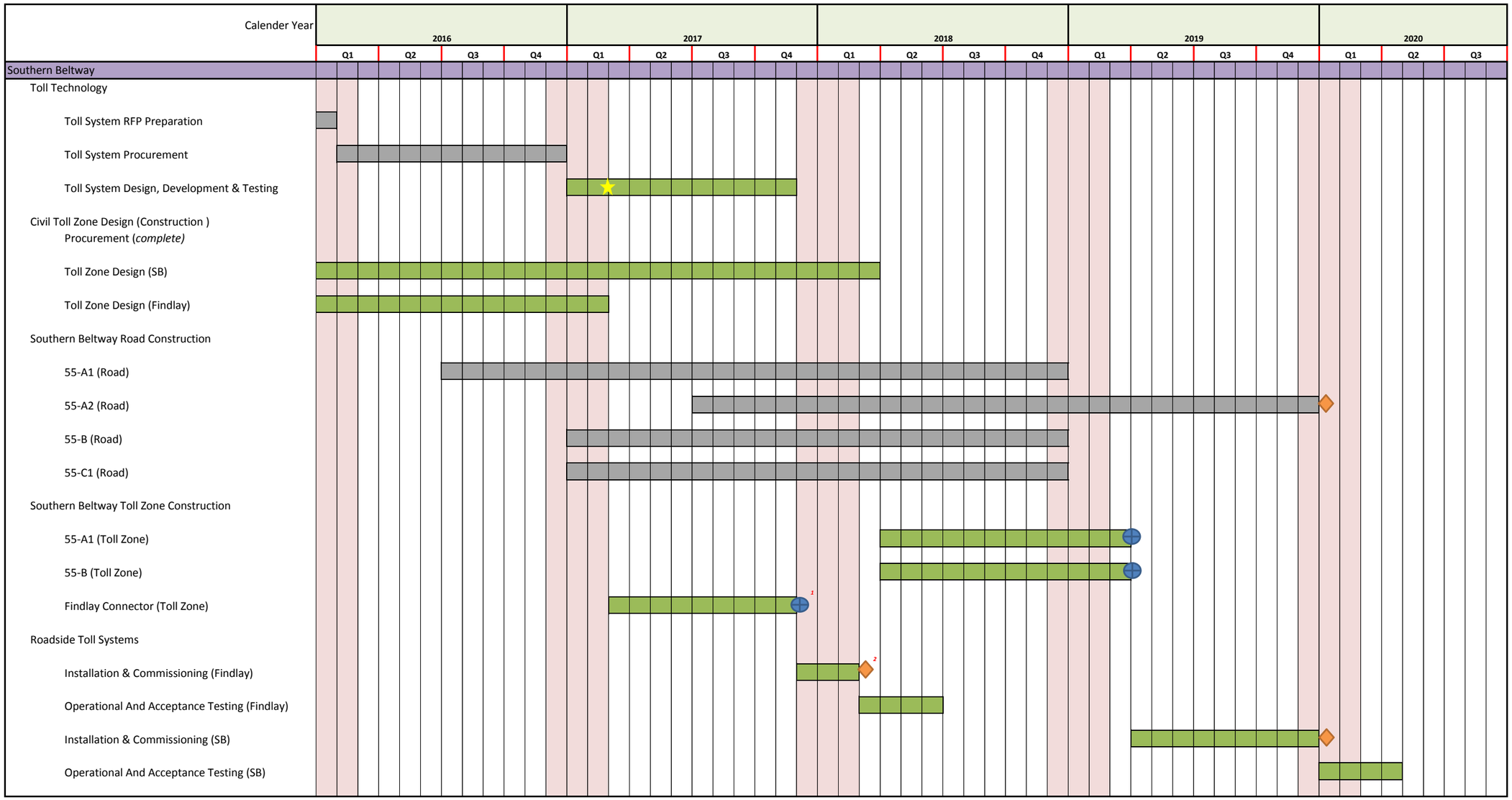
4. The annual adjustment shall be equal to the cumulative change in the applicable index for the latest previous 12 month period available at the time of the anniversary date.
5. The applicable index shall be applied as follows:
    a. CPI shall be applied when the entire component of the cost is direct Contractor labor.

Exhibit D - Payment Schedule

A. Payments for Implementation Cashless Tolling System Design and Development					$ -
Payment Number	**Payment Milestone**	**Pay Items**	**% Paid**	**Cum.% Paid**	
A-1	Notice to Proceed	Notice to Proceed.	5.00%	5.00%	$ -
A-2	Cashless Toll System Development and Administration	Project Management Documents Approved (PMP, Project Schedule, QA Plan and SDP, SRD).	10.00%	15.00%	$ -
A-3	Cashless Toll System Design	Business Rules and Design Documents Approved (BRD and SDDD) .	15.00%	30.00%	$ -
A-4	Cashless Toll System Factory Acceptance Testing (FAT)	Test Documentation and Factory Acceptance Testing Approved.	15.00%	45.00%	$ -
A-5	Cashless Toll System Onsite First Installation Testing (OFIT)	Installation Plan Approved, Test Documentation and Onsite Integration Testing Approved - First Site.	10.00%	55.00%	$ -
A-6	Cashless Toll System Manuals and Training	Manuals Approved and Training Approved.	5.00%	60.00%	$ -
A-7	Cashless Toll System Commissioning - Findlay Connector	Installation and Commissioning Approved Ready for Go Live.	5.00%	65.00%	$ -
A-8	Cashless Toll System Commissioning - Southern Beltway	Installation and Commissioning Approved Ready for Go Live.	10.00%	75.00%	$ -
A-9	Cashless Toll System Acceptance	Operational and Acceptance Test Approved, As-builts Approved and Implementation Phase Closed Out.	25.00%	100.00%	$ -

B. Payments Related to Hardware, Equipment and Off-the-Shelf Software				
Payment Number	**Payment Milestone**	**% Paid**	**Cum.% Paid**	
	Findlay Connector			**$ -**
B-1	Ordering Verified Findlay Connector	20.00%	20.00%	$ -
B-2	Purchased, Received and Verified Findlay Connector	60.00%	80.00%	$ -
B-3	Installation Approved Findlay Connector	20.00%	**100.00%**	$ -
	Southern Beltway			**$ -**
B-4	Ordering Verified Southern Beltway	20.00%	20.00%	$ -
B-5	Purchased, Received and Verified Southern Beltway	60.00%	80.00%	$ -
B-6	Installation Approved Southern Beltway	20.00%	**100.00%**	$ -

Southern Beltway Cashless Tolling Implementation Schedule (DRAFT*)
RFP 16-10495-7252 Addendum #1



* Final Implementation schedule to be developed by the Contractor with Approval from the Commission.

Approved Civil Design 60 days from NTP

1 Findlay Connector Toll Zone available to Contractor November 27, 2017

2 Findlay Connector Go-Live February 25, 2018

Sites Available to Vendor for installation and testing

Projected Go-Live

Winter Months that may impact Construction

Attachment F-6: Instructions for Completing Requirements Conformance Matrix

1) The Proposer must complete and submit the Excel version of the Requirements Matrix which is provided in PDF form in Attachment F-6: Requirements Conformance Matrix. The Excel version of the Workbook shall be downloaded from the Commission's Website at: www.paturnpike.com/procurement.

2) The Matrix cover each of the requirements set forth in Exhibit A, Scope of Work.

3) Proposers shall not alter the requirements listed in the Requirements Matrix in any way and must use the workbooks provided. The Proposer shall submit a PDF version of the completed Matrix in Technical Proposal Section 6, in addition to submitting the Excel version of the Matrix on CD/DVD, as directed in Section 2.2.2 Proposal Format and Content Instructions.

4) The following are instructions for completion of the Requirements Conformance Matrix:

a) There are four columns in the - Requirements Conformance Matrix as follows:

i. No. (Column A): A sequential number that matches the requirement number in the Requirements.

ii. Requirements (Column B): A description of each requirement.

iii. Status of Functionality (Column C): Proposer must select one of the five (5) response codes for each Requirement and enter it in this column as further detailed in item "b)" below.

iv. Comments (Column D): This field must be completed if the Status of Functionality code is entered as "N = will not be provided" for the particular requirement in order to explain why the Proposer is not complying with this Requirement.

b) Proposers must complete the Status of Functionality (Column C) in the following manner:

i. Existing = E: Enter an "E" in this column if the requirement described is already met by the current system, no modification required.

ii. Modification = M: Enter an "M" in this column if the functionality exists and is provided in the proposed System but needs to be modified to meet the requirement.

iii. Replaced = R: Enter a "R" if the function is available within the current system, but will be replaced to meet PTC needs.

iv. To Be Developed = D: Enter a "D" if the function is not in the current system, but will be developed.

v. Not Provided = N: Enter an "N" if the Proposer will not provide the functionality and will not meet the requirement as part of its Proposal. If any row in the Status column is completed as "N" then Proposer must provide an explanation in the Comments (column D) in the corresponding row. The comment field may reference information that is included elsewhere in the proposal.

Functional Requirements - Addendum #1			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
II	**Cashless Tolling System Installation Requirements**		
2.1	**In-lane Systems Functional Requirements**		
	This section defines the In-lane requirements of the Contractor Scope of Work. Each Segment of the Highway has a tolling point which could have one or two toll zones and tolls are collected in each direction of travel at the toll zones. At the toll zones identified, the Cashless Tolling Equipment and electronics shall be installed on toll gantries and in the toll equipment building provided by the civil contractor. The types of toll gantry conceptual details at each of the toll zones are provided in *Attachment 5: Concept Plan for Overhead Structures/Toll Gantries.* The Contractor shall work with the Commission, the civil designer and civil contractor on requirements for all civil design and construction work to be performed by others on the Project, including the design and location of equipment mounting locations and retractable mounting arm(s).		
2.1.1	**Cashless Tolling System Hardware**		
2.1.1.1	**General Requirements**		
1	All Hardware and Equipment supplied under this Contract, including consumable material (material that requires periodic replacement/replenishment), shall be new and certified to have a ten (10) year minimum service life. Materials and products that have been previously used for development work or the Contrator's internal testing, or items that have been salvaged or rebuilt shall not be permitted to be used in connection with this Contract.		
2	All components, supplies and materials furnished under this Contract for the Cashless Tolling System shall be new, Commercial Off-the-Shelf (COTS) and to the extent possible, field proven, and in revenue operations to the extent possible.		
3	All components procured, furnished, and installed by the Contrator shall be available through multiple sources identified by the Contrator to the extent possible and the names of such sources shall be readily available to the Commission. The Commission shall have the right to purchase third-party Equipment directly from the Equipment vendor.		
4	All Hardware and Software provided under this Contract shall be supported by their manufacturer, upgradeable, maintained, updated, patched and secured throughout the term of the Contract.		
5	Proof of purchase in the form of purchase orders, dated invoices and shipping bills shall be retained by the Contrator and furnished to the Commission in accordance with the requirements of this Scope of Work and Contract.		
6	All Commission standards in accordance with the requirements of this Scope of Work shall be maintained throughout the term of the contract. Standards include but are not limited to, IT security, data retention, Software and Database design and development, installation, change management, testing, maintenance and protection of traffic (MPT) and safety.		
2.1.1.2	**FCC License**		
7	The AVI system shall comply with all applicable Federal Communications Commission (FCC) regulations.		
8	It is the Contrator's responsibility to prepare the required application and the Commission will obtain the required FCC licenses for all AVI equipment provided under this Scope of Work and Agreement. The Commission has the FCC licenses for the existing AVI systems.		
9	The Contrator shall, as part of this effort, identify and accommodate any site conditions that may potentially degrade the performance of the AVI system.		
10	Under all circumstances it is the Contrator's responsibility to comply with the AVI performance requirements of this Scope of Work and Agreement and no relief in such performance shall be provided.		
2.1.1.3	**Maintainability**		
11	The Cashless Tolling System Hardware shall be designed with the following specifications:		
	· modular, replaceable and repairable components to allow for efficient Maintenance;		
	· all replacements shall be plug compatible with no changes required;		
	· all components that perform the same function shall be interchangeable;		
	· all zone controllers shall be designed such that they are identical and can be configured to operate the specific number of lanes at each toll zone as shown in Attachment 1: Cashless Toll Zone Locations through the addition of Hardware pluggable modules and setting of appropriate Software parameters;		
	· where possible, there shall be a second source for all parts and components and it shall be identified in the Bill of Materials (BOM) unless otherwise Approved by the Commission;		
	· all electronic components shall be installed in equipment racks and installed inside the toll equipment building at each toll zone/toll point as applicable;		
	· zone controllers shall be expandable at a minimum to add two (2)additional in-lane devices;		
	· Contrator's electronic Design and installation shall prevent electrical disturbances and noise in the electronics;		
	· ISO standard I/O interface modules shall be used in the Design and all serial, discrete and network interface boards shall have at minimum two (2) spare slots to support the addition of components;		
	· all exposed junction boxes, pull boxes and other Hardware shall be either zinc coated and epoxy painted or stainless steel;		

Functional Requirements - Addendum #1			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
	· all field wiring shall be terminated on screw lugs or connectors and all connectors shall be keyed or polarized to prevent incorrect connections;		
	· all wiring and connectors shall be labeled and strain relief shall be provided to protect the conductors;		
	· surge suppression shall be provided for all field wiring susceptible to lightning or similar surges;		
	· all lane Equipment shall be fused and protected against over current, over voltage, under voltage and lightning;		
	· redundant power supplies shall be provided for all required internal DC voltages, and		
	· all Equipment shall be properly grounded to ensure the safety of Maintenance personnel.		
2.1.1.4	**Diagnostics**		
12	Equipment mounting and installation design shall support the maintenance of Equipment from above and from below on toll gantries as applicable to each cashless toll zone.		
13	Maintenance personnel shall have easy access to major subsystem components, and removal, testing, and replacement shall not require tools. Components mounted on overhead structures shall also be capable of tethering to secure points during removal or placement during replacement activities such that items cannot be dropped. All test points necessary to diagnose the Equipment while in operation shall be easily accessible and light emitting diode (LED) indicators shall be provided to assist technicians to identify and diagnose problems.		
14	Technicians shall have the ability to connect a laptop authorized by the Commission in accordance with Commission policies to troubleshoot the components. Technicians shall have secured remote access to the device to monitor its status and to perform diagnostics when the lane is in operation.		
15	For easy diagnostic and trouble shooting, all error and event logs shall be consolidated such that all events and errors associated to a transaction are in a single log. The consolidated error and event logs shall be retained online for a configurable period of time and shall be easily accessible to the technicians.		
16	The consolidated error and event logs shall also be transmitted to the MOMS and available to Authorized Users in viewable form. Search and filter capability shall be provided to display and review data in the consolidated log.		
17	All diagnostics performed shall be recorded and automatically reported to the MOMS, including the technician ID, the time the Maintenance was performed, and all status and recovery messages.		
18	All diagnostic Software and specialty tools required for support of Maintenance activities shall be supplied by the Contrator and the Commission shall have full rights and access as further defined in the Contract. All Software and operating systems shall meet the Commission's most current technology standards; all such Software and equipment shall meet Commission IT security standards.		
2.1.1.5	**Customized Hardware**		
19	If customized components or controllers are used, the Contrator shall provide detailed documentation on the Design, production and testing of these units and shall provide usage rights to the Commission. Documentation shall include electronic diagrams, component layouts and the detailed Bill of Material listing manufacturers/vendors. The Contrator shall identify all customized components and controllers and indicate their plan to make them available for the term of the Contract, including the option for placing in escrow.		
2.1.1.6	**Equipment Racks**		
20	All in-lane Equipment controllers and Cashless Tolling System electronics, devices, servers and associated communications Equipment shall be installed inside dedicated toll equipment racks that are housed within the toll equipment building according to a layout Approved by the Commission IT Department. The Contrator shall purchase and install the equipment racks in accordance with the requirements of this section.		
21	It is the Contrator's responsibility to provide the equipment racks of the correct size that meets the requirements of this Scope of Work. Equipment racks shall have adequate space (twenty five {25} percent extra) for added boards, servers and components for future expansion.		
22	The equipment racks shall support the Cashless Tolling System components for a minimum of ten (10) years. The equipment racks shall not be used to support peripheral non-toll related equipment.		
2.1.1.7	**Environmental**		
23	The Cashless Tolling System Equipment to be supplied will be installed in areas exposed to the range of climatic conditions found in Pennsylvania. In addition to the climatic conditions, the Equipment will also be subjected to harsh environmental factors normally found in the operation of a toll lane, such as, but not limited to: car, truck, and bus emissions; deicing materials, industrial exhausts; industrial cleaners; gasoline and car lubricants; Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI), and vibrations. These conditions shall be taken into account in the Design and selection of Equipment used on this Project and the Contrator shall ensure that the System works accurately and reliably in such environment.		
24	Lane electronics, zone controllers, LPICPS controllers/servers and other components shall be able to operate in the sealed and enclosed environment of the equipment racks installed within the toll equipment building.		
25	All Hardware provided under this Contract shall be corrosion resistant and remain corrosion resistant for the term of the Contract.		

Functional Requirements - Addendum #1			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
26	The in-lane Equipment not in environmentally controlled conditions shall operate with no degradation of performance in ambient air temperature of negative thirty (-30) to seventy (70) degrees Celsius, with and without direct sunlight, and relative humidity of five (5) to one hundred (100) percent for Equipment installed in an outside environment and five (5) to ninety-five (95) percent non-condensing for Equipment installed inside equipment racks.		
27	During the Design phase, the Contrator shall provide specification sheets that prove the zone controller and other lane electronics meet the environmental specifications given above. Results of all environmental tests conducted and certification of compliance shall be provided to the Commission for Approval.		
28	All exposed or in-lane Equipment, when in its fully assembled configuration, shall not be damaged, nor shall operational performance or expected lifetime be degraded. During Design phase, the Contrator shall provide specifications for the in-lane Equipment for Commission Approval.		
2.1.1.8	**Assembly**		
29	All customized Hardware shall be assembled and tested in the Contrator's fabricatioNAssembly facilities before being installed in the lane in accordance with the Commission's Approved test plan for customized Hardware. All chassis, attachments, and Hardware shall be fabricated stainless steel, hot dipped galvanized or other materials resistant to salt exposure and corrosion.		
30	All customized Hardware shall be identified and shall undergo a seventy-two (72) hour burn-in test before they are installed in the lanes, in accordance with the Commission's Approved test plan.		
31	Customized Hardware assembly shall facilitate replacement of failed components in accordance with requirements of this Scope of Work.		
2.1.1.9	**Bill of Materials**		
32	The Contrator shall include the BOM for all Equipment and Hardware supplied for the Cashless Tolling System. Each component shall also include the second manufacturer source and any exceptions shall be noted and explained. During the Design phase the BOM shall be finalized and all changes shall be subject to the approval of the Commission.		
33	Prior to purchase of any Equipment and as part of its Design the Contrator shall submit the final BOM to the Commission for Approval. No equipment shall be purchased by the Contrator prior to Approval of the BOM and the Design, unless otherwise authorized in writing by the Commission.		
34	All Hardware and Software procured under this Scope of Work shall be confirmed to be the latest model/version at the time of purchase with the required warranty, security, Maintenance and support Services.		
35	Updates to the BOM shall be provided by the Contrator whenever changes occur and at a minimum on a semi-annual basis over the term of this Contract.		
2.1.10	**Spare Parts and Support**		
36	The Cashless Tolling System procured, furnished, and installed under this Contract shall allow the Contrator to Maintain and replace parts for the term of the Contract. The Contrator shall provide a spare parts list the cost to the Commission (inclusive of shipping) and recommended quantities for all Hardware supplied for the Cashless Tolling System for each year of the Contract.		
37	This Contract shall include the initial purchase quantities of spare parts required for the operation of the tolling points during the Warranty period as recommended by the Contrator. Costs for the replacement of spare parts during the Warranty period shall be the responsibility of the Contrator.		
38	At the end of the Maintenance term, all spare parts inventory shall be turned over to the Commission at one hundred (100) percent of the required inventory level. The Contrator shall identify (via the MOMS) the warranty status for each piece of Hardware and warranty period remaining, if applicable.		
2.1.2	**Cashless Tolling System Software**		
39	The operating system, database, other third-party Software, and Cashless Tolling System Software procured, furnished, and installed by the Contrator shall support real time operations of the lane and shall be field proven.		
40	The operating systems shall have a future upgrade path and shall be supported for a minimum of ten (10) years. The Contrator shall ensure that the risk of obsolescence to the Hardware is minimized through the selection of the operating system Software and the peripheral Hardware.		
41	All Cashless Tolling System Software developed, furnished, and installed under this Contract shall be warrantied against Software defects, security vulnerabilities and deficiencies for the term of the Contract and as described within the Contract and associated attachments.		
42	The vendor shall have an annual information security risk assessment and a vulnerability scan performed by a third party, in consultation with Commission IT Security, and provide the results to the Commission.		
2.1.3	**Cashless Tolling System Lane Configurations**		
43	The Cashless Tolling System shall support the toll zone types, lane configurations and dimensions detailed in Attachment 1: Cashless Toll Zone Locations.		

Functional Requirements - Addendum #1			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
44	Travel lane widths shall be assumed to be standard twelve (12) feet in all lanes. Shoulders widths for each toll zone are detailed in Attachment 1: Cashless Toll Zone Locations. Shoulder lanes that are eight (8) feet or greater shall be fully equipped as a travel lane. Shoulder lanes that are less than eight (8) feet shall have vehicle detection and image capture Equipment to detect and capture vehicles straddling the shoulder.		
45	During the detailed Design, the Contrator shall make the required adjustments to the System Design to accommodate for variations in the actual lane widths.		
2.1.4	**Toll System Requirements**		
2.1.4.1	**Toll System Software Security**		
46	Access to information on the Cashless Tolling System and network shall be password controlled. The access shall be role based and limited to the authorized Contrator staff and designated Commission personnel.		
47	Accounts for user access to the System shall require a strong password and be compliant with Commission IT security standards and requirements.		
48	User access security, including sign-on facilities, permission control and access privileges for different levels shall be provided for the files, directories and application Software and shall be fully configurable by a system administrator. Access to all systems needs to be controlled through a central repository with each user having an unique log-in.		
49	User sign-on, access and access failures, both local and remote, to any element of the Cashless Tolling System shall be recorded and tracked for security audit proposes and reported to the MOMS. The System shall continuously and automatically monitor for unauthorized access; violations shall be reported to the MOMS as priority 1 Alert. These reports should be provided to Commission IT Security within twelve (12) hours of discovery.		
50	The Contrator shall develop the access levels, user roles and privileges matrix during System Design with the Commission input, including review by Commission IT Security, and Approval. The System shall allow for addition and changes to the access levels, user roles and the addition of personnel in a secure manner.		
51	A system level account shall be provided for Commission security systems to perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool. Additionally, Commission IT Security can request the Contrator to perform any scans and ensuing reports through the term of the Contract.		
52	The Contrator shall not circumvent the Commission Approved System security. All access to the System and Approved changes made shall be recorded, monitored, reviewed and audited by the Commission. Specific requirements shall be developed by the Contrator during System Design.		
53	Authorized Users shall have access to the zone controller user access logs to audit the system access.		
2.1.5	**Cashless Tolling In-Lane System**		
2.1.5.1	**Automatic Vehicle Identification (AVI) System**		
54	The Contrator shall provide an AVI system that is compliant with the E-ZPass Group interoperability requirements at the tolling points specified in this Scope of Work.		
55	The Commission will procure the antennas and the readers as specified by the Contrator through a certified E-ZPass Group vendor. The Contrator shall take delivery of the equipment and the Contrator shall be responsible for the AVI equipment installation and maintenance upon delivery.		
56	The Contrator shall furnish and install all other Hardware, cabling and associated mounting fixtures to form a fully functioning AVI system that meets the requirements of this Scope of Work.		
57	The Contrator shall be responsible for the physical tuning of the certified AVI Equipment, and integrating the AVI system into the Contrator in-lane Design. In addition, the AVI vendor shall certify that the lanes are tuned to the Approved AVI specifications. All AVI installation, configuration and tuning shall be in compliance with the certified E-ZPass Group vendor requirements.		
58	The Contrator is responsible for synchronizing all AVI readers that are in close proximity to the tolling points as required by the certified AVI manufacturer.		
59	The AVI system shall provide full coverage in all areas of the toll zone to read and report transponders. Transponders on vehicles straddling the shoulders that are less than eight (8) feet shall be read and reported to the zone controller. The Contrator shall support adjustments to the antenna quantity and placement based on the final shoulder configuration.		
60	The Contrator shall maximize any inherent redundancy built into the AVI readers whereby the failure of the master or primary reader will result in the reporting of the transponder reads via the slave or secondary reader.		
61	The AVI system shall be able to read the transponder, write to the transponder and report all E-ZPass Group interoperable transponders on vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane, traversing lanes and straddling lanes with no interference or degradation of performance. Non-E-ZPass Group interoperable transponder reads shall also be reported and flagged if the AVI system is capable of reading such transponders.		
62	The AVI system shall have the ability to process transponders mounted on vehicles traveling in stop and go and bumper-to-bumper traffic and vehicles traveling at speeds of up to one hundred (100) miles per hour.		

Functional Requirements - Addendum #1			
		Required Proposer Inputs	
		Status of Functionality	Comments
No.	Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current systsem, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	If "Status of Functionality = N" then Proposer must provide an Explanation in this Column
63	The read zones in the lanes at a toll zone shall be tuned such that transponders in vehicles traveling through the lanes in the opposite direction of travel are not reported by the AVI system.		
64	The AVI system shall buffer transponder reads when it is unable to communicate to the zone controller. When communications are restored, the Buffered Transponder Reads shall be reported to the zone controller.		
65	If more than one transponder is present in a vehicle, the AVI system shall have the ability to accurately read, write to and report multiple transponders that are compliant with the E-ZPass Group and future National Interoperability (NIOP) requirements. The zone controller shall properly associate the first read Commission transponder that has a valid status at the time of the transaction to the vehicle and report the additional transponders in the transaction. If both transponders have a valid status the zone controller shall associate the first read to the vehicle and report any additional transponders in the transaction. Additional transponder reads transmitted to the Cashless Toll Host System shall be reported to the existing CSC/VPC system according to the Business Rules.		
66	The Contrator shall use the full capability of the selected AVI system to obtain AVI system status in accordance with the manufacturer specifications and report such status to the MOMS. Loss of communication to any element of the AVI system shall be immediately detected by the zone controller and reported to the MOMS. The Contrator-provided monitoring logic shall specifically detect any failures and generate alarms when failures are detected.		
67	The Contrator shall provide maintenance tools to support remote lane tuning, diagnostics and other configuration changes. Setup and configuration of the AVI system shall be achieved remotely and shall not require lane closure except for major lane tuning, when initially installed or when a reader or antenna is replaced.		
2.1.5.2	**Automatic Vehicle Classification (AVC) System**		
68	The Contrator shall analyze the site conditions and Design, procure, furnish and install the required sensors and Hardware on all lanes at the specified Cashless Toll Zones as part of the AVC system that performs in accordance with performance requirements set forth in this Scope of Work under all weather conditions. The AVC system shall accurately detect, classify and separate vehicles spaced as close as three (3) feet apart traveling in stop and go and bumper-to-bumper traffic and vehicles traveling at speeds up to one hundred 100 miles per hour.		
69	The AVC system shall determine vehicle axle count or axle count and vehicle dimensions, and classify vehicles in accordance with the Commission vehicle classification structure described in Attachment 4a: PTC Proposed AVC Class Structure and Silhouette based on the type of toll location. Classification of vehicles traveling on the shoulders of less than eight (8) feet width is not required; however, the System shall detect vehicles that travel on the shoulder and trigger the LPICPS.		
70	The AVC system shall have the ability to detect trailer hitches and ensure that vehicles with a trailer in tow are reported as one unit to the zone controller as part of the vehicle transaction data.		
71	The AVC system shall determine the speed of the vehicle and report the speed to the zone controller as part of the vehicle transaction data.		
72	The Contrator shall ensure that there is sensor coverage at all areas of the toll zone to accurately detect and report vehicles traveling the shoulder and vehicles straddling lanes.		
73	The AVC system shall provide vehicle event messages and signals, and vehicle classification data to the zone controller. Exception conditions processed by the AVC system shall be included in the transaction data, for example vehicle straddling the lane.		
74	The Contrator's proposed AVC system shall have redundancy whereby AVC continues to function in the event any element of the AVC system fails or is degraded. The failure of a single sensor shall not prevent the lanes from processing vehicles or impact the System's capability to accurately associate transponders and to capture and process images.		
75	The AVC system shall report its health to the zone controller and shall provide status when polled. Loss of communication to any element of the AVC system shall be immediately detected and reported. All health and failure status messages shall be transmitted and reported to the MOMS. In the event the primary AVC sensor fails, then the secondary sensors shall be used to capture and process images in accordance with the Commission Business Rules.		
76	In the event there is a Class Mismatch between the AVC system and the transponder class, as defined by the Commission Business Rules during the Design phase, an image of the vehicle shall be captured and processed. The ability to enable or disable image capture for a Class Mismatch shall be configurable.		
2.1.5.3	**License Plate Image Capture and Processing System (LCICPS)**		
77	The Contrator shall Design, procure, furnish, and install all necessary front and rear LPICPS Hardware and Software required to support the video tolling and video processing requirements as set forth in this Scope of Work.		
78	High resolution front and rear cameras shall be utilized for performing the OCR/ALPR.		
79	Contrator shall install high resolution front and rear color ALPR cameras to meet the requirements of the Scope of Work. The Contrator shall install high resolution front and rear color cameras to provide one hundred (100) percent image capture during individual camera failures and excessive glare conditions.		
80	The LPICPS shall capture and process vehicles traveling in stop and go and "bumper-to-bumper" traffic, vehicles traveling at speeds up to one hundred (100) miles per hour, and vehicles with separation as close as three (3) feet apart.		

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81	The Contrator shall ensure that there is shoulder coverage and vehicles traveling through any area of the toll zone, including but not limited to shoulder, center of lane, traversing lanes and straddling lanes, shall be accurately detected and their images captured and processed in accordance with the Commission Business Rules.		
82	The LPICPS shall buffer images (retaining an image until its disposition is known) such that no image is lost in order to support multiple vehicles in the lane and in accordance with the Commission Business Rules.		
83	The Contrator shall procure, furnish, and install cameras, lighting, necessary image triggers, backup triggers and the necessary camera control Software to automatically adjust the cameras to accommodate varying light and weather conditions to maintain adequate brightness and contrast settings, with or without traffic, to ensure optimum license plate information capture under all conditions and time of day.		
84	The system shall associate all images captured for a single vehicle to the vehicle transaction including multiple images captured by a camera.		
85	Lights installed in support of the cameras shall not distract motorists traveling in either direction in the lanes. Contrator shall make no assumption of ambient light and the system shall function without any degradation regardless of the ambient light.		
86	The Contrator shall procure, furnish, and install the necessary redundant controllers/servers to support the in-lane LPICPS Equipment and such servers shall be separate of the zone controller servers.		
87	The Contrator shall provide robust industrialized computers and operating systems (PC's or workstation-type operating systems are not permitted) sufficient processor speed and memory to process vehicles in real time to meet the speed and traffic volumes as specified in this Scope of Work.		
88	The LPICPS controllers/servers shall support standalone operations and be sized to store a minimum of thirty (30) days of images and data per lane at each of the toll zones under normal operating conditions.		
89	The LPICPS shall perform with no degradation under conditions where every vehicle is considered a video transaction (100 percent video transaction). Under these conditions the System shall store images at the lane level for minimum of seven (7) consecutive days per lane. The System shall provide a configurable setting for the processing of one hundred percent (100) percent of video transactions.		
90	When the storage utilization on the LPICPS controllers/servers reaches a configurable percentage (for example 80 percent), a message shall be transmitted to the MOMS. Images shall be deleted only after it is confirmed/acknowledged that the images have been successfully transmitted to the image server(s). Any deletion of images shall be automatic, without user intervention, and shall generate a message to be transmitted to the MOMS (configurable).		
91	The LPICPS controllers/servers architecture shall have full redundancy such that failure of a processor, board, power supply, disk, communications or other critical component does not result in loss of images and data.		
92	In the event communications to the LPICPS are lost or any LPICPS Hardware becomes non-operational, the Contrator's Design shall ensure that no images and/or data are lost and that all images and associated data are saved to a backup controller/server and transmitted to the image server(s) upon restoration of communications.		
93	The Contrator's Design shall guarantee transmission of the video transactions, images and license plate results (optional) from the lanes to the image server(s) and from the image server(s) to the existing CSC/VPC system.		
94	The System shall provide the capability to reconcile images to the transaction data and verify one hundred (100) percent transmission of video transactions and images to the existing CSC/VPC system.		
95	If the Contrator solution includes toll rate determination within the In-lane Systems, then the video transactions may have the toll rates assigned to each transaction as specified in the Approved interface control document (ICD).		
96	The Contrator's architecture shall support the image throughput requirements specified in the Scope of Work.		
97	The LPICPS shall be capable of continuously performing diagnostics and reporting its health to the zone controller and the MOMS. Loss of communication to any element of the LPICPS shall be immediately detected. All health, failure and recovery status messages shall be transmitted and reported to the MOMS.		
98	The LPICPS shall be capable of transferring video transaction data, images and license plate data to the image server(s) or the existing CSC/VPC systems in real-time or in batch mode as determined by the Commission to efficiently utilize the limited network bandwidth.		
99	Software tools shall be provided that allow Authorized Users to verify the image quality in real-time and adjust and tune the images remotely.		
2.15.4	**Optical Character Recognition (OCR)/Automatic License Plate Recognition (ALPR) – Optional**		
	If the option to provide OCR/ALPR Software is exercised, then the Contrator shall provide OCR/ALPR Software for determining the license plate data (number, jurisdiction and plate type) that results in the System meeting the requirements specified in the Scope of Work.		
100	The OCR/ALPR Software may reside at the toll zone level, plaza level or the Highway level, as long as it meets the performance and functional requirements specified in this Scope of Work.		
101	The System shall correctly identify the jurisdiction, plate type, special characters and stacked characters, and accurately determine the license plate number.		

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102	There shall be no backlog or failure in the processing of images for obtaining the license plate data (number, jurisdiction and plate type) and there shall be server redundancy whereby standby servers are available immediately and fully operational in the event of a failure.		
103	The OCR/ALPR Software procured, furnished, and installed under this Contract can include Software that enhances and improves the accuracy and efficiency of the OCR/ALPR process. The System shall meet the OCR/ALPR performance requirements specified in this Scope of Work for license plates from States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA.		
104	The LPICPS shall provide the capability of detecting image quality degradation in near real-time and generate alarms that are reported to MOMS when image quality impacts OCR/ALPR performance.		
105	If a vehicle has two license plates or cameras capture multiple front and rear images for a vehicle, the region of interest (ROI) for all license plates shall be obtained and the license plate number from all plates shall be extracted and associated to the vehicle transaction.		
106	Vehicles with two rear license plates shall be identified to allow the back-office to apply separate Business Rules for such transactions.		
107	The images transferred to the existing CSC/VPC system shall include, at a minimum, the front and rear full uncompressed image(s) and the ROI.		
108	Based on the OCR/ALPR results, the System shall identify the best license plate image that was used by the OCR/ALPR to obtain the license plate data including identification of front and rear images.		
109	The data transmitted along with the image shall meet the Approved ICD and shall include, but not be limited to:		
	· transaction data;		
	· license plate data, including license plate number, jurisdiction and plate type;		
	· confidence level of the OCR/ALPR results for individual characters and overall license plate number;		
	· confidence level of the jurisdiction, and		
	· enforcement notification status and action (if exercised).		
110	For audit and Maintenance purposes, Authorized Users shall have the capability to view all the images in real time on any device connected to the Cashless Tolling System network and verify the OCR/ALPR performance.		
111	For audit and testing purposes Authorized Users shall have the ability to perform image review, utilize image enhancement tools, and enter license plate data independent of the normal image processing workflow. A flexible user interface shall be provided that allows Authorized Users to select the image review criteria. Data entered through this process shall be transmitted to the Cashless Toll Host System for reporting.		
112	All data entered through the independent image review process for testing and audit described above shall be saved separate from the normal production environment and shall be available to Authorized Users through reports. Such an audit process shall not impact normal operations and in most cases will occur after the images are transmitted to the existing CSC/VPC system.		
2.1.6	**Enforcement Notification -** *Optional*		
	If the option to provide Enforcement Notification functionality is exercised, then the Contrator shall provide Enforcement Notification that results in the System meeting the requirements specified in the Scope of Work.		
113	The Cashless Tolling System shall support the Maintenance and update of VEL that contains transponder numbers and license plate numbers that the Commission requires notification on. This could include repeat violators.		
114	The VEL will be transmitted from the existing CSC/VPC system to the Cashless Toll Host System and from the Cashless Toll Host System to the lanes at frequent configurable increments and when changes take place.		
115	The Cashless Tolling System shall provide the capability to alert applicable personnel if the System detects a transponder or license plate passing through the cashless toll zone that is identified for enforcement notification. The criteria for notification shall include the status of the transponder and presence of the license plate on the VEL.		
116	Notification methods shall include but not be limited to text message, email or system to system interface.		
117	The System shall alert applicable personnel within twenty (20) seconds of the vehicle passing through the toll zone if a vehicle on the VEL is identified. The transponder ID, transponder status, license plate number and jurisdiction shall be included in the alert.		
118	If an enforcement notification was successfully transmitted to applicable personnel, the transaction shall have a flag denoting the transmission of the enforcement notification. This enforcement transmission status shall be transmitted to the existing CSC/VPC system.		
119	The System shall support the transmission of images (configurable) to the applicable personnel and shall include the image of the vehicle or just the ROI.		
2.1.7	**Zone Controller**		
2.1.7.1	**Zone Controller Hardware**		
120	A fully redundant zone controller shall be Designed, procured, furnished, and installed at each of the toll zones. The redundant zone controllers shall have the identical configuration.		
121	The zone controllers shall be installed in equipment racks and housed in the toll equipment building whether there is a single or dual toll equipment building at each tolling point.		

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122	When any Hardware and/or process on the primary zone controller fails preventing it from processing vehicles and creating transactions, the secondary zone controller shall automatically and immediately assume the functions of the primary zone controller. The failover from the primary zone controller to the secondary zone controller shall be transparent to the rest of the System and shall not require human intervention or the restart of any subsystems. Only one zone controller at a time shall generate revenue transactions.		
123	Alarm messages shall be generated and reported to the MOMS when such a failover event occurs. The Contrator's failover Design shall ensure that there is no loss of revenue or transactions when one of the zone controllers fails.		
124	The System shall provide Authorized Users the capability to manually and remotely failover the active zone controller to and from the primary zone controller to the secondary zone controller. All such events shall be recorded and transmitted to the MOMS.		
125	The zone controllers shall be Hardened, industrial grade servers and the processor speed and memory shall be sufficient to process vehicles in real time to meet the traffic speed and volumes as specified in this Scope of Work.		
126	Storage shall be sized to store a minimum of thirty (30) days of transaction and event data for each lane at the toll zone supported by the zone controller.		
127	Proprietary zone controller Hardware will be considered for use, subject to the Commission's Approval. All drawings and instructions that enable construction and assembly, installation, repair, and modification of the Hardware, as well as sufficient property and use rights shall be provided to the Commission.		
2.1.7.2	**Zone Controller Software**		
128	The zone controller Software shall interface to the various devices and subsystems for each of the toll zone types specified in Attachment 1: Cashless Toll Zone Locations and perform all the functions as described in this Scope of Work for all Commission toll facilities.		
129	The zone controller located at each toll zone shall process all of the data obtained from the other subsystems as described in this Scope of Work to generate a transaction record for each vehicle passage through the toll zone. The zone controller shall:		
	· manage the TSL for all E-ZPass Group interoperable agencies used to validate the status of a transponder received from the AVI system;		
	· use the data obtained from the AVI and AVC systems to assign the transponder read to the correct vehicle and frame the vehicle transaction accurately;		
	· notify the LPICPS to capture and process vehicle images if no Valid Transponder read is obtained from a vehicle or if the Commission Business Rules require the capture of an image;		
	· transmit the transaction record to the facility server (if provided) or to the Cashless Toll Host System, including but not limited to the following data: vehicle detection and classification data, transponder data, Equipment status data, and all other pertinent information regarding the transaction as specified during the Design phase;		
	· transmit to the MOMS all alarm messages relating to the health of each subsystem, including the health of the primary and secondary (redundant) zone controller. Recovery messages shall also be transmitted and reported;		
	· ensure that vehicle event data and transaction data shall be accessible to the DVAS, and		
	· transmit to the facility server (if provided) or Cashless Toll Host System for further processing all other messages/events in accordance with Approved ICDs.		
130	The zone controller Software shall be configurable and shall be able to support the Commission Cashless Tolling operational needs without requiring changes to Software. The configurable parameters shall be defined and documented during the Design process. All parameters shall have default values that shall be established during the Design process.		
131	The Contrator shall propose appropriate Protocols and data structures to accomplish the communications required between various peripherals. These Protocols and data structures shall be fully detailed and documented, in Consultation with the Commission, by the Contrator during the Design process and Approved by the Commission.		
132	Guaranteed transmission Protocols shall be used for all messages exchanged between systems, including but not limited to:		
	· zone controller;		
	· LPICPS;		
	· AVI system;		
	· AVC system;		
	· facility servers (if provided);		
	· Cashless Toll Host System;		
	· image server(s);		
	· existing CSC/VPC;		
	· DVAS;		
	· MOMS, and		
	· the PTC Toll Host		

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133	The Cashless Tolling System shall support the various lane configurations shown in Attachment 1: Cashless Toll Zone Locations. The zone controller application Software shall support all lane functions required to meet the Commission Cashless Tolling operational requirements.		
2.1.7.3	**Zone Controller Start-Up**		
134	Upon start-up or initialization the zone controller shall perform a self-diagnostics test to ensure full System operations. Alarm messages shall be reported for all failure conditions and a notification of the diagnostic check completion shall be displayed on the MOMS Dashboard. The failure of a critical system shall result in the toll zone operating under degraded operations in accordance with the Commission Business Rules.		
135	Upon start-up, the zone controller shall verify with the facility server (if provided) or the Cashless Toll Host Systems that it has the latest configuration files; VEL (if exercised); TSL; and any other files required to support the lane operations. If the latest files are not present on the zone controller, it shall request the latest data from the facility server (if provided) or Cashless Toll Host Systems. If a zone controller is unable to get the latest files, an Alert shall be generated and sent to MOMS.		
136	The zone controller shall also synchronize its time with the Commission time source and an Approved secondary source upon start-up and at established configurable intervals. The zone controller shall also support a secondary source for time synchronization.		
2.1.7.4	**Lane Operations**		
137	The Cashless Tolling System shall support various modes of operation that are managed and initiated by Authorized Users through the Cashless Toll Host.		
138	Transactions shall be processed according to different Business Rules either at the lane level or the host level based on the mode of operation. The Contrator shall be responsible for ensuring that the AVI and video transactions are processed according to Commission Business Rules and transmitted correctly to the existing CSC/VPC system.		
139	The Cashless Tolling System shall support the following modes of operations:		
	· Open Mode: All transactions shall be processed normally in an open mode;		
	· Maintenance Mode: Transactions created in Maintenance mode are processed as normal transaction but are identified as Maintenance mode transactions and transmitted to the Cashless Toll Host. Transactions that occur during Maintenance mode are not reported as traffic or revenue transactions.		
	· Emergency Mode: Transactions created during emergency mode shall be identified as emergency mode transactions and processed in accordance with Commission Business Rules to be determined during the Design phase.		
	· Save Image Mode: Capability shall be provided whereby Authorized Users can enable and disable a zone controller to save one hundred (100) percent of vehicle images processed through the LPICPS based on various selection criteria. Transactions under such condition shall be processed normally; however, these transactions and images shall be flagged with the save image mode and processed according to the Commission Business Rules (for example audit purposes).		
140	When a lane is operating in a mode other than normal open mode, an Alert shall be generated and sent to MOMS at regular (configurable) intervals.		
141	Authorized Users shall have the ability (local and remote) to configure the next operating mode and to gracefully shutdown the zone controller. Each time a mode change is requested an Alert message shall be sent to the MOMS.		
2.1.7.5	**Transaction Processing**		
142	The zone controller shall detect, classify, and frame vehicles; assign the transponder accurately to the correct vehicle and capture and process the image of the correct vehicle in accordance with the Commission Business Rules and with the performance requirements specified in this Scope of Work.		
143	The detailed transaction processing rules shall be defined and finalized during the Design phase; however, the following basic rules shall apply:		
	· the System shall have the ability to process and record multiple transponders in a vehicle and associate each transponder to the vehicle transaction;		
	· any non-E-ZPass Group interoperable transponder reads shall be reported to the Cashless Toll Host System;		
	· a minimum of one revenue bearing transaction shall be created for each vehicle that travels through the toll zone and the zone controller shall ensure that the transaction is complete prior to transmitting it;		
	· the zone controller shall be able to accurately identify, process, and track multiple vehicles in the toll zone;		
	· the zone controller shall ensure that duplicate transponder transactions (same transponder ID) are not reported from the same lane or toll zone within a configurable period of time or consecutively;		
	· buffered transponder reads that are transmitted to the zone controller shall be processed but not be assigned to a vehicle by the zone controller and shall be flagged and reported to the Cashless Toll Host Systems for further processing and vehicle assignment;		
	· the zone controller shall automatically synchronize with the various subsystems to ensure the events in the lane correspond to the transaction generated, and		
	· the System shall incorporate self-correcting logic to adjust for lane anomalies and event synchronization issues.		

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144	The transaction message details shall be defined and finalized during the Design phase; however, the following basic rules shall apply:		
	· The In-lane System shall transmit the video transaction to the existing CSC/VPC system for processing and billing.		
	· the In-lane System shall transmit AVI and video transactions to the Cashless Toll Host Systems for processing, reporting, and reconciliation with the CSC/VPC;		
	· the transaction message shall contain all data required by the existing CSC/VPC systems to process the AVI and video transaction;		
	· each transaction shall contain various event times to help with transaction pre-processing and synchronizing events to a transaction including but not limited to: "vehicle entry" time; "LPICPS trigger" time; "transponder read" time; "transponder write" time, and "vehicle exit" time. Such event times shall allow transponder reads, images and transaction to be associated correctly with the vehicle, and		
	· the System shall assign a lane number to each transaction and report the lane in which the vehicle was detected.		
2.1.7.6	**E-ZPass Group Mapped Class**		
145	The System shall utilize the raw E-ZPass Group class obtained from the transponder data and map that raw class to the Commission E-ZPass Group proposed axle+dimension mapped class in accordance with Attachment 4b: E-ZPass Group Mapped Classes to be finalized during the Design Phase.		
146	The System shall retain the raw E-ZPass Group class and include that in the transaction data along with the E-ZPass Group mapped axle+dimension class for Commission.		
147	If a transponder has a raw E-ZPass Group class that is not mapped to the Commission E-ZPass Group axle+dimension class then the transaction shall be assigned a default class (configurable).		
2.1.7.7	**Revenue Vehicle Class (PTC Class)**		
148	The assignment of the Revenue Vehicle Class in normal operations and in degraded mode of operations shall be in accordance with the Commission Business Rules. If no classification data is obtained, a configurable default revenue class shall be assigned to the transaction and the transaction shall be flagged.		
149	The Revenue Vehicle Class shall be used to determine the fare amount for a transaction as defined by the Commission Business Rules. Flags in the transaction shall identify which class was used as the Revenue Vehicle Class.		
150	The System shall have the capability to cap the maximum and minimum (configurable) axles and class and to charge a set toll rate per additional axle count.		
151	Transactions shall include the raw E-ZPass Group class, AVC class, mapped E-ZPass Group class and Revenue Vehicle Class. The Revenue Vehicle Class assigned in accordance with the Commission Business Rules shall be used to determine the toll amount.		
2.1.7.8	**Fare Determination**		
	Fare determination is not required at the In-lane Systems, and can be performed at the Cashless Tolling Host or PTC Toll Host. The Contrator solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions and shall meet the following requirements. Currently the existing CSC/VPC system assesses the toll for violation transactions and will continue to do so for video transactions; however, the Contrator can assign the toll to video transactions if the Contrator solution provides this capability.		
152	Fare determination shall be performed at the In-lane Systems, the Cashless Toll Host system or the PTC Toll Host for all AVI transactions.		
153	The Contrator solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions.		
154	Fare determination may be performed at the In-lane Systems for all video transactions and may later be adjusted at the PTC CSC/VPC based on the transaction categorization, for example Vidoe Image Toll (Vtoll).		
155	Tolls shall be assessed using the toll rates and schedules established for each tolling point. The toll rate and class structure for the various toll facilities are not developed yet but the System shall support the toll rate and class structure for the classifications in Attachment 4a: PTC Proposed AVC Class Structure and Silhouette based on the toll location.		
156	The System shall support the assessment of toll by payment type for example video, E-ZPass, and Non-Revenue; vehicle class and location.		
157	Home Agency (Commission issued) Non-Revenue transponders shall be charged $0.00 (configurable) fare but Away Agency Non-Revenue transponders shall be charged the normal fare.		
158	Class 1 motorcycles with valid E-ZPass transactions that use a Home (Commission issued) transponder shall be charged a configurable discounted fare.		
159	Motorcycles and other vehicles that qualify for discounted fare shall be identified by using the E-ZPass Group vehicle Type 2 which is comprised of E-ZPass Group class 136, 140 and 144. The category of E-ZPass Group class that qualifies for discounted fare shall be configurable.		
160	Motorcycle discount fares shall be rounded to the nearest penny (configurable) but shall be no less than the minimum fare (configurable). Currently the minimum fare is fifty (50) cents.		

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161	The toll charged for E-ZPass transactions shall be based on Commission Business Rules developed during the Design phase and shall consider the operational status of the AVC.		
162	Tolls charged for video transactions shall be based on AVC (if it is operational) or the default class and shall be defined during the Design phase.		
163	Transactions shall be flagged if the vehicle class is estimated by the AVC system (for example, when the class is based on the vehicle profile).		
2.1.7.9	**Saving of Images**		
164	Images shall be captured and saved for the following conditions and as further defined during the Design process, including but not limited to:		
	· in all cases where there is no transponder read (including when the AVI system is down or degraded), the transponder is not "valid", or a non- interoperable read is detected;		
	· in all cases where there is a vehicle classification condition as determined by the Commission Business Rules, for example in conditions where the AVC class is estimated by the System;		
	· if the LPICPS loses communications with the zone controller in accordance with the Commission Business Rules;		
	· in all cases where there is a Class Mismatch between the transponder class and the AVC, as determined by the Commission Business Rules, and		
	· in conditions where the "save image mode" is enabled.		
165	Images saved during a LPICPS loss of communication event shall be flagged and subsequently matched with the correct transaction data when communication with the zone controller resumes. This matching can occur at the Cashless Toll Host but shall take place in a manner that does not interfere with or degrade real time zone controller operations.		
166	If the AVC system is not operational but the LPICPS trigger is functioning, images shall be saved such that all non-Valid Transponder transactions that occur during the AVC malfunction can be subsequently pursued for collection. Sufficient data shall be provided in the transactions to allow the PTC CSC/VPC to process such transactions so that customers are not charged in error when lane operation is degraded.		
2.1.7.10	**Configuration Files**		
167	All parameters and settings required to run the zone controller application and the lane equipment shall be maintained in configuration files. Access to configuration files required to support the zone controller operations shall be limited to Authorized Users.		
168	The configuration files shall be maintained at the toll zone and the Cashless Toll Host System for configuration and version control. All zone controllers shall have default configuration files that allow the lane to start-up automatically.		
169	Authorized Users shall be able to make changes to parameters and settings that are defined as configurable in this Scope of Work and in the Approved Design documents. Authorized Users shall be able to make changes to the configuration files in the field. Changes to configuration shall result in an Alert message to the MOMS. All changes made to the configuration files in the field shall be synchronized to the master configuration file that is maintained at the Cashless Toll Host.		
170	Each zone controller shall automatically back up its critical configuration files to a backup server once a day to be used to rebuild the master drive in the event of hard disk failures.		
2.1.7.11	**Zone Controller Interfaces**		
171	The zone controller shall interface to various devices and subsystems to transmit and obtain data and synchronize the time.		
172	The zone controller shall provide checks on all data it receives from each of the devices and subsystems it interfaces to and generate alarm messages that are reported to the MOMS.		
Interface to AVI System			
173	The zone controller shall interface with the designated AVI system in accordance with the Approved ICD and transmit all relevant transponder data received from the AVI system, as defined and Approved by the Commission during the Design phase, and reported as part of the vehicle transaction data to the Cashless Toll Host System.		
Interface to AVC System			
174	The zone controller shall interface with the AVC system to obtain vehicle events that shall permit accurate detection, classification, tracking and processing of vehicles. Vehicle class and speed information shall also be obtained from the AVC system and reported as part of the vehicle transaction data reported to the Cashless Toll Host System.		
Interface to LPICPS			
175	The zone controller shall interface with the LPICPS to capture and process images of vehicles in accordance with the Commission Business Rules to be developed during the Design phase. The vehicle data, OCR/ALPR results (if the option to implement OCR/ALPR is exercised) and images obtained from the LPICPS shall be transmitted to the image server(s) to support the Commission's video tolling and processing requirements and PTC E-ZPass CSC operations requirements.		

Functional Requirements - Addendum #1			
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Interface to DVAS			
176	The zone controller shall interface with the DVAS to transmit event data for display on the DVAS. The event data shall include transponder reads and AVC event messages that are received as the vehicle travels through the lane.		
Interface to Facility Server/ Cashless Toll Host System			
177	The zone controller shall interface with the facility server (if one is deemed necessary) or directly to the Cashless Toll Host System to transmit lane data and to receive files, commands, messages and other data required for lane operations. Error detection checks shall be instituted on both systems to ensure incorrect or corrupt data is not inserted into the System. The Contrator shall work with Commission IT Security to develop a secure method of allowing this flow of data through a Commission firewall into the network.		
178	The Cashless Tolling System shall include automated methods to determine when there is a loss of communications between the zone controller and the facility server (if provided) or Cashless Toll Host System; any failures detected shall be reported to the MOMS.		
179	The Cashless Tolling System shall include automated methods to determine when there is a loss of communications between the zone controller and the image server(s); any failure detected shall be reported to the MOMS.		
180	Receipt of all files and data shall be acknowledged; any transmission failures shall be reported to the MOMS.		
181	The Contrator shall provide an automated means of synchronizing the zone controller and facility server (if provided) or Cashless Toll Host System messages in the event that the zone controllers are replaced, communications are down, or if data on the zone controller is not retrievable due to a catastrophic failure.		
2.1.7.12	**Transmitting Data**		
182	All messages generated at the zone controllers shall be transmitted to the facility server (if provided) or Cashless Toll Host System in real-time using a transport mechanism that performs error detection and correction to guarantee data transmission. All messages shall be uniquely identified and validated at the Cashless Toll Host System to ensure there are no missing or duplicate messages.		
183	The System shall support exception handling in accordance with the Commission Business Rules Approved during the Design phase. An alarm shall be generated and reported to the MOMS for all failed transactions, exceptions and errors.		
184	Failure of transmission of data to the facility server (if provided) or Cashless Toll Host System shall result in the generation and transmission of alarm message to the MOMS.		
185	All messages shall be confirmed as received by the facility server (if provided) or Cashless Toll Host System before they are flagged for purging or overwritten. In the event of a communication failure the messages shall be retained on the zone controller until successful transmission is complete and verified.		
186	The zone controller shall transmit all data to the facility server (if provided) or Cashless Toll Host System, including but not limited to the following:		
	· all transaction messages generated in the lanes;		
	· all alarm and status messages generated in the lanes;		
	· all lane operational communication status messages and system health messages;		
	· all events generated in the lanes that are displayed on the Dashboard or are required at the Cashless Toll Host System, and		
	· all events required by the DVAS for real-time review or playback.		
2.1.7.13	**Receiving Data**		
187	The zone controller shall support the E-ZPass Group TSL and other interoperable agency lists and shall have the capability to support every Agency and its assigned transponder number range as described in the E-ZPass Group specifications.		
188	The zone controller shall accept comprehensive (complete list once a day) and incremental (changes updated on a configurable interval, but not more frequently than every sixty (60) minutes) TSLs in accordance with the established Business Rules and shall activate the lists upon validation of the files.		
189	The Contrator shall utilize data compression, encoding or other means to efficiently store and transmit the E-ZPass Group TSL and other interoperable agency lists, such that the new lists are available at the zone controllers within thirty (30) minutes of the Cashless Toll Host System receiving the new lists.		
190	If tolls are determined by the In-lane Systems, then the toll rates, toll schedules and the effective date/time shall be downloaded to the zone controller and new toll rates initiated when the toll rate structure changes.		
191	All configuration files and tables needed to support the lane operations shall be downloaded to the zone controllers from the Cashless Toll Host System upon confirmed change or at scheduled intervals and activated as required. Versions of the configurable files on each zone controller shall be maintained, tracked, and recorded.		
192	All zone controller Software shall be downloaded to the zone controllers from the Cashless Toll Host System. Software versions on each zone controller shall be maintained, tracked, and recorded.		
193	The Cashless Tolling System shall provide checks to detect issues with the data it receives from the facility server (if provided) or Cashless Toll Host System, including but not limited to:		
	· incorrect versions of the data received;		

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	· corrupted data received, and		
	· missing files when a file was expected.		
194	An alarm shall be generated and reported to the MOMS for all exceptions/errors.		
2.1.7.14	**Monitor All Lane Equipment for Device Status**		
195	Each zone controller shall monitor the status and system health of its internal components and all associated in-lane Equipment. All Cashless Tolling Systems, including the AVI system, AVC system and the LPICPS shall be continuously polled for status. The health of digital devices that do not provide status shall be inferred from events (for example simple loops).		
196	The System shall generate a recovery message and restore the operational status of a device that recovers after reporting a failure. Recovery messages shall be recorded against the original work ordered through the MOMS and shall be available to Authorized Users. Recovery messages shall not cause the associated work order to close, but shall serve as supporting evidence of an Equipment recovery.		
197	If communications from the zone controller to the facility server (if provided) or Cashless Toll Host System are unavailable, an alarm message shall be generated and reported to the MOMS.		
198	If communications to the image server(s) are unavailable, an alarm message shall be generated and reported to the MOMS.		
199	If a lane is operating in any mode other than normal open mode an Alert message shall be generated at configurable intervals and reported to the MOMS.		
2.1.7.15	**Diagnostics and Equipment Malfunction**		
200	The zone controller Software shall execute periodic diagnostic checks on internal processes, the in-lane Equipment and interfaces. Peripheral devices shall be interrogated for device status on a regular basis (configurable per device).		
201	A device's failure to respond to a status inquiry after a configurable number of retries shall be regarded by the zone controller Software as an Equipment failure.		
202	An alarm shall be generated and reported to the MOMS for all failures that are detected.		
203	Diagnostic checks shall be performed in all modes of lane operation. Results shall be stored in the appropriate zone controller's event log and easily accessible to technicians. The System shall include "sanity checks" for fault conditions and shall report any detection of such conditions to the MOMS.		
204	Degraded modes of operation shall be supported based on the Commission Business Rules developed during the Design process and Approved by the Commission. The Contrator shall ensure the Cashless Tolling System continues to operate with minimal loss of revenue or visible impact to the patron in the event that some components of the Cashless Tolling System fail and degraded mode operations occur.		
2.1.7.16	**Stand-alone Mode of Operation**		
205	The zone controller shall operate in a stand-alone mode for a minimum of thirty (30) days if communications to the Cashless Toll Host Systems are down. When operating in stand-alone mode, the last files downloaded from the Cashless Toll Host Systems shall be used for processing vehicles.		
206	The zone controller shall have an available data port to permit onsite manual uploading of Software, TSL or other data required for continued operation until communications with the Cashless Toll Host Systems is re-established. Devices utilized to download the TSL and rate tables to the lanes shall have the capability of synchronizing current file versions such that a new TSL is updated on the device within an hour of receipt.		
207	The System shall provide the capability for Authorized Users to download transactions from the zone controller and to transfer such transactions to the Cashless Toll Host Systems, and from the Cashless Toll Host Systems to the existing CSC/VPC system.		
208	The System shall provide the capability for Authorized Users to download event/transaction data for manual and stand-alone playback of the DVAS.		
209	Upon re-establishing communications with the Cashless Toll Host Systems all back-logged messages, including manually transferred messages, shall be flagged and transmitted to the Cashless Toll Host System without affecting the real time operations or degrading lane operations.		
210	Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be generated and reported to the MOMS.		
2.1.8	**Digital Video Audit System (DVAS)**		
211	The Contrator shall provide a Digital Video Audit System (DVAS) that provides the Commission the capability to investigate lane performance issues and support the Commission in customer dispute resolution.		
212	The Contrator shall develop, procure, furnish and install two or more IP addressable, color video cameras as part of the DVAS at each toll zone sufficient to meet the requirements of this section. The cameras installed shall be the same at all Toll Zones.		
213	Authorized Users shall have the ability to individually setup, configure and control the cameras remotely through the application. Configurable settings shall be available on a per-camera basis to allow for tuning for site conditions.		
214	As part of the Design phase, the Contrator and the Commission shall determine the optimum location for the installation of the DVAS Equipment to allow for the complete monitoring of each toll lane.		

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215	The location and number of cameras shall permit the capture of video that allows Authorized Users to identify the vehicle class and number of axles based on the ambient lighting conditions.		
216	The Contrator is responsible for the installation of the DVAS Equipment, including mounting Hardware to the designated structure (either toll gantry or separate mounting pole) as well as power and signal cabling between the DVAS Equipment and the storage media as described in Attachment 2: Cashless Tolling Installation Responsibility Matrix.		
217	The DVAS cameras shall have pan-tilt-zoom (PTZ) functionality that allows Authorized Users to remotely control each camera. When no PTZ commands are received within a configurable time the DVAS cameras shall revert to their default settings. Alarm messages shall be generated and reported to the MOMS when remote controls are activated or settings other than the defaults are detected.		
218	The Contrator shall provide the lighting requirements to the civil Contrator during the Design phase, as needed to ensure that the quality of the video of each toll lane, based on ambient lighting and/or weather conditions, is sufficient to meet the requirements.		
219	The DVAS shall include all Equipment and Software necessary to provide the audit capability described herein, including but not limited to:		
	· digital cameras and any associated lenses, lighting and sensors;		
	· interfaces to the zone controllers to capture event data;		
	· storage media, and		
	· an application to view real-time video and events and playback the information.		
220	The DVAS video stream and audit data shall be provided to the Cashless Tolling System independently of the transaction data stream; however, the DVAS shall be integrated into the System application and the video stream shall be linked to the transaction to meet the requirements specified in this section.		
221	The Contrator shall provide Authorized Users the ability to access to the DVAS through the Cashless Tolling System application using any device authorized by the Commission with access to the Commission System network.		
222	The DVAS video and event data shall be available from the Dashboard to Maintenance staff when investigating anomalies.		
223	The DVAS solution for each tolling point shall provide the capability to monitor the overall configuration of the toll lanes with the ability to see each lane and the vehicle traveling that lane, and shall display detailed events for each lane as they occur in real-time.		
224	At a minimum the DVAS shall display the highway, plaza ID, lane number, transaction number, transaction date and time, transponder ID, transponder class and the AVC class. The DVAS video and data shall be accessible in read-only mode; no changes or alterations to the video or data shall be allowed.		
225	All detailed data obtained from various subsystems shall be available and shall be displayed to assist auditors and Maintenance staff with the investigation of discrepancies and problems. The DVAS shall perform and display video and data in real-time and shall have the ability to playback event data.		
226	The DVAS shall also have the capacity to record and store up to a minimum of sixty (60) days (configurable) of video and data to an electronic media for each toll zone.		
227	DVAS video and the corresponding event and transaction data shall be saved together such that when the data is moved to a different environment outside the production environment, the video can be replayed with the corresponding event and transaction data as long as the DVAS replay Software is available.		
228	The health of the DVAS shall be displayed and monitored. Any problems or failures detected shall be reported to the MOMS.		
229	The DVAS shall be time synchronized to the same source as the zone controllers and shall interface to the zone controllers to obtain event data in accordance with the Approved ICD.		
230	The DVAS screens shall allow the Authorized User to obtain and sort the video/data events through various query criteria or configurable report templates finalized during the Design phase, including but not limited to:		
	· lane ID;		
	· vehicle class;		
	· transaction time;		
	· payment type;		
	· transaction time range;		
	· alarm condition;		
	· class mismatch condition;		
	· unusual event conditions;		
	· transponder ID, and		
	· transponder status.		
231	Identification displayed on the screen shall allow the reviewers to clearly differentiate the lane under review and its associated event data.		

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232	The DVAS shall provide the capability to save the displayed contents of a screen (images and data) and electronically distribute such information as needed.		
233	Controls shall be provided to allow reviewers to step forward and backward through video data, by frame and to display the associated event data. All digitized video and corresponding event data shall be tightly synchronized and stored in accordance with these requirements.		
2.1.9	**Cashless Tolling Facility Server (Optional)**		
	The provision of a facility server is optional but if the Contrator's solution includes a facility server, then the requirements in this section shall be met. The Contrator has the option to use the facility server as an image server as long as the Design complies with the requirements of the Scope of Work.		
234	The Contrator shall provide one or more facility servers located at a tolling point if it is deemed necessary to meet the requirements specified in this Scope of Work. A facility server or set of servers can support multiple toll zones.		
235	The Contrator shall furnish and install a complete Hardware configuration for each facility server to support the redundancy and performance requirements of this Contract, including but not limited to:		
	· multiple processors;		
	· dual, redundant, hot-swappable power supplies;		
	· redundant storage devices; and		
	· backup library.		
236	The Hardware solution shall provide high-speed intra system network fabric between all storage, databases, servers, and backup systems.		
237	The facility server shall interface to the zone controller and shall serve as a store and forward server for transactions and messages.		
238	Each facility server shall communicate with the primary and secondary Cashless Toll Host Systems.		
239	Each facility server shall be capable of storing transactions and images (if used as a local image server) from the in-lane subsystems for a period of minimum sixty (60) days, in the event of a communications failure.		
240	The facility server shall be capable of operating in a stand-alone mode for a minimum of sixty (60) days if communications to the Cashless Toll Host Systems are down. When operating in stand-alone mode, the last files downloaded from the Cashless Toll Host Systems shall be used for processing vehicles.		
241	The facility server shall have an available data port to permit onsite manual uploading of Software, TSL, or other pertinent data required for continued lane operation until communications with the Cashless Toll Host Systems are re-established. Devices utilized to download the TSL and rate tables (if applicable) to the facility server shall have the capability of synchronizing the current versions whereby a new TSL is updated on the device within an hour of receipt.		
242	The System shall provide the capability for Authorized Users to download transactions from the facility server and transfer such transactions to the Cashless Toll Host Systems.		
243	Upon re-establishing communications with the Cashless Toll Host Systems all back-logged messages, including manually transferred messages, shall be flagged and transmitted to the Cashless Toll Host Systems without affecting the real time operations or degrading the lane operations.		
244	Upon re-establishment of communications and successful transmission of all messages, a recovery message shall be transmitted to the MOMS.		
245	Failure of any component of the facility server shall be detected and reported to the MOMS.		
2.1.10	**Roadway Pavement, Overhead Structures/Toll Gantries, and Toll Equipment Building Design Support**		
2.1.10.1	**General Design Requirements**		
246	At the tolling points the Contrator shall install the toll collection equipment on the infrastructure provided by the civil Contrator as identified further in Attachment 2: Cashless Tolling Installation Responsibility Matrix.		
247	The Contrator shall work with the Commission, the civil designer and civil Contrator on requirements for all civil construction work to be performed by others on the Project, including overhead platforms/toll gantries, toll equipment buildings, roadway/pavement, power requirements and conduit relative to the aspects that integrate with the Design and installation of the Cashless Tolling System.		
248	The Contrator shall cooperate and provide support as needed to the civil Design and construction efforts. During civil design, Contrator support is anticipated to include responses to information requests for clarification on proposed designs.		
249	During construction, Contrator shall provide review and approval of civil Contrator shop drawings or similar within the context of the toll system functional and performance requirements.		
250	During installation, the Contrator shall provide verification and approval of toll system related elements that the civil Contrator is responsible for installing.		
251	Upon approval of shop drawings or similar design elements by the Contrator within the context of System function and performance, Contrator shall assume responsibility for those elements to the extent that if the civil work is installed as designed and does not meet the performance requirements of this Scope of Work, the Contrator shall be responsible for the costs of redesign, civil rework and additional Equipment costs as further set forth in the Contract.		

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252	Contrator shall also coordinate and be available onsite as needed during the installation of the civil elements related to the Cashless Tolling System to ensure that the civil work is performed in accordance with the Contrator's requirements.		
2.1.10.2	**Overhead Structures/Toll Gantries**		
253	The Contrator's Equipment mounting and installation Design for any AVC overhead Equipment, AVI Equipment and LPICPS Equipment shall take into consideration its accessibility from the walkways on the overhead structure at the tolling points. The Design of the mounting structures and mounting arm shall allow technicians to replace Equipment and restore it to normal operations without additional tuning and without impacting performance.		
254	The Contrator's cable routing Design shall include sufficient service loops to facilitate the retrieval of Equipment from the walkway providing sufficient retractable capability.		
255	The Contrator shall provide in-lane Equipment Design, installation specifications, structural requirements and drawings for mounting the Equipment to the overhead structures/toll gantries at each toll zone as it relates to the Contrator's Equipment requirements to the civil Contrator(s), including but not limited to Equipment mounting locations and installation instructions, mounting structure and mounting arms, conduit, junction box, and electrical requirements, wind load, Equipment load and power calculations, as well as Contrator requirements related to special electrical grounding and isolated circuit integrity by Equipment.		
256	The Contrator shall also review and Approve all aspects of toll overhead structures/toll gantries design drawings submitted by the civil Contrators that are related to the toll system Equipment, including but not limited to, the items identified in the requirements above in this section.		
257	The Contrator shall be responsible for all necessary mounting Hardware required to install the toll Equipment on each overhead structure/toll gantry as specified in this Scope of Work and shall ensure installation is in compliance with Commission specifications.		
258	The Contrator's Equipment installation Design shall have all overhead Equipment tethered to the platform structure at all times during installation and removal. The Equipment mounting devices shall also be tethered such that no loose bolts, nuts or pins shall fall into live traffic during Maintenance activities.		
259	The Contrator shall be responsible for all Equipment installations, terminations, and connections of Equipment located on the overhead structures/toll gantries and for connecting such Equipment to the electronics in the equipment racks within the toll equipment building.		
2.1.10.3	**Uninterruptible Power Supply (UPS)**		
260	All Cashless Tolling System Hardware and equipment shall be on UPS. The UPS will be supplied by the civil Contrator.		
261	The civil Contrator will furnish and install automatic transfer switch (ATS) and smart Power Distribution Units (PDUs) to manage the roadside power distribution.		
262	The Contrator shall furnish and install an electronic interface to the UPS to monitor the UPS performance. The MOMS shall detect the status of the UPS and Alert technicians when the System is on UPS.		
263	Software drivers shall be developed, furnished, and installed to acquire, display, store and report all parameters provided as outputs from the UPS.		
264	When the System is on the UPS and when it is off the UPS a notification shall be reported to the MOMS.		
2.1.10.4	**Toll Equipment Building**		
	A toll equipment building with UPS, backup generator and Heating, Ventilation and Air Conditioning (HVAC) will be provided by the civil Contrator at each tolling point indicated in Attachment 1: Cashless Toll Zone Locations. The emergency backup generators are contained in a separate room with outside access as shown in Attachment 5: Concept Plan for Overhead Structure/Toll Gantries.		
265	The toll equipment building shall house the Cashless Tolling System equipment racks provided by the Contrator.		
266	The Contrator shall provide the equipment rack space requirements to the civil Contrator for each toll equipment building at each tolling point.		
267	The Contrator shall install equipment racks within the toll equipment building in accordance with applicable Pennsylvania State building codes and Pennsylvania State DOT design standards, if and where applicable.		
268	The Contrator shall adhere to all specifications of the latest PennDOT Standard Specifications at time of construction unless the Contrator receives written notification by the Commission which overrides the Standard Specifications. The PennDOT Standard Specifications can be found at: http://www.dot.state.pa.us/Internet/Bureaus/pdDesign.nsf/ConstructionSpecs408and7?OpenForm		
269	At locations where tolling points are in close proximity to one another, a single toll equipment building with backup power generator will be used to support the toll Equipment requirements for multiple toll zones. At locations where a single toll equipment building is used for the Equipment at multiple toll zones, the Contrator shall procure, furnish, and install the interconnecting signal and power cables, and the necessary equipment racks and Equipment required for the multiple toll zones. The civil Contrator is responsible for the provision of power and the raceway. The Contrator shall ensure that the lane performance is not degraded at locations where a single toll equipment building is utilized for multiple toll zones and that cable lengths are within manufacturer specifications.		

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270	The Contrator shall also review and Approve all aspects of the toll equipment building design drawings, power specifications, electrical and cabling design, circuit breaker and switches, and grounding design submitted by the civil designer and civil Contrators that are related to the Cashless Tolling System Equipment.		
271	The civil Contrators will install the conduits between the toll equipment building and the demarcation point on the overhead structures/toll gantries as shown in Attachment 6: Installation Demarcation Diagram. The Contrator shall procure, furnish and install any conduit required from the demarcation point to the Equipment and between the various components on the overhead structures/toll gantries.		
272	The Contrator shall procure, furnish, and install the cables necessary for terminating and connecting the Cashless Tolling System Equipment on the overhead structures/toll gantries to the electronics in the toll equipment building. Cable lengths shall include sufficient service loops to facilitate maintenance.		
273	The Commission is responsible for the WAN communications and the Commission will furnish and install networking equipment at the toll equipment building and test the communications to the network at the PTC Data Centers. The Commission shall make available a number of ports, as specified during the Design phase, to the Contrator to allow access to the Commission network through the Commission administered firewall. The Contrator shall be responsible for all LAN communications related to the Cashless Tolling In-lane System and the Cashless Toll System outside the Commission firewall as shown in Attachment 3b: PTC Communications Network Responsibilities.		
274	Each location will be allotted an IP v4 Class C range of addresses and all networking addressing will be coordinated with the Commission. LAN equipment shall be capable of supporting IPv6 addresses.		
2.1.10.5	**Roadway Pavement**		
275	During the Design phase the Contrator shall provide the in-pavement sensor requirements to the civil designers and civil Contrators, if such sensors are to be used. Additionally, the Contrator shall review and approve the pavement Design, including roadway material to be utilized and construction methods to be used in the construction of the pavement.		
276	The Contrator is responsible for the Design and installation of all elements of the Cashless Tolling System that embedded into the pavement.		
277	The Contrator shall coordinate with the civil designer and civil Contrators for the installation of the sensors in the lanes and identify the pull boxes and conduits. The location and Design of the pull boxes shall minimize the impact of Maintenance activities on the affected lane.		
2.2	**Cashless Toll Host System Functional Requirements**		
2.2.1	**Cashless Toll Host System – General Requirements**		
278	The Contrator's central processing system architecture shall include a fully redundant highly available primary and secondary Cashless Toll Host System that meets the functional and performance requirements of the Scope of Work and is accessible to Authorized Users of the Commission System network.		
279	The functions of the Central Image Servers (if provided) and the MOMS shall be part of the Cashless Toll Host System.		
280	The cashless toll collection process shall be administered and controlled by the Cashless Toll Host System provided by the Contrator.		
281	The Contrator shall work with the Commission to procure, furnish, and install all servers, storage and communications Hardware needed to support the Software that meets the Commission Cashless Tolling System requirements. While choosing the Cashless Toll Host System Hardware and third-party Software, the Contrator shall consider the staged implementation of the Cashless Tolling System in order to ensure the products are supported for the entire duration of the PTC Cashless Tolling Project.		
282	The primary Cashless Toll Host System shall be installed in the PTC Data Center, a different physical location in the vicinity of the PTC Data Center, or a privately hosted Cloud location Approved by the Commission. The secondary solution can be hosted anywhere within the contiguous United States or an Approved, privately hosted, Cloud location. All infrastructure required to support the servers, including but not limited to UPS, air conditioning, security and backup generators shall be the responsibility of the Contrator. The primary and secondary Cashless Toll Host System configuration shall meet the Commission resiliency and Business Continuity plans.		
283	The secondary Cashless Toll Host System shall be configured as a "hot stand-by" in an active-active state to allow continuous operations in the event of a failure of the primary Cashless Toll Host System.		
284	The secondary Cashless Toll Host System environment shall mirror the primary system in all Hardware and Software configurations, be kept up to date and be capable of performing all functions of the primary Cashless Toll Host System as described in this Scope of Work.		
285	All Hardware and third-party Software procured under this Scope of Work shall be confirmed to be the latest model or version at the time of purchase and shall be Approved by the Commission.		
286	All servers and Hardware procured, furnished, and installed under this Contract shall have current anti-virus, firewall, spam protection and other security Software that protects from virus attacks and unauthorized access. All such third-party products shall meet the Commission IT security requirements described in Attachment 7: PTC Cashless Tolling Security Standards.		

Functional Requirements - Addendum #1			
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287	The System shall detect intrusion attempts and prevent all unauthorized access and intrusions at all levels and report such events to the MOMS. Any intrusion, compromise or breach must be reported to Commission IT Security with 12 hours of detection.		
288	Virus protection and other Software shall automatically obtain updates according to a recommended (configurable) Maintenance schedule and report such events to the MOMS.		
289	Redundancy shall be built into the System to support high availability requirements defined in table II-2.		
290	The Cashless Toll Host System shall support the following general functions:		
	· communicate with all the zone controllers in receiving transaction, alarm and other messages and transmitting TSLs, UIL and VEL (if exercised);		
	· communicate with facility servers (if provided) in receiving transaction, alarm and other messages and transmitting TSLs, UIL and VEL (if exercised);		
	· communicate with the applicable image server(s) for tracking and reconciliation image transmission and transfer status;		
	· provide Dashboards to assist Maintenance and supervisory staff observation of transaction and event data in real-time, including reviewing DVAS image/video, images and data through these screens;		
	· provide the capability to remotely operate the cashless tolling lanes through real time screens;		
	· interface with the existing PTC Toll Host system to transmit transaction details and alarms;		
	· provide the capability to import detailed and summarized data from the existing PTC Toll Host for historical reporting purposes;		
	· interface with the existing CSC/VPC system to transmit transactions and toll rates and receive TSL and VEL (if exercised);		
	· interface with SAP for the transmission of monthly toll transaction GL files and GL files received from the CSC;		
	· perform Maintenance management functions of the System, including alarm notification and tracking, Equipment inventory, Maintenance history and other Maintenance related functions, incorporated into the MOMS;		
	· provide an independent audit of successful receipt of all transactions from the zone controllers to the Cashless Toll Host System;		
	· provide the capability to manage toll rate/toll schedule and transmit the toll rates/toll schedules to the zone controllers and the existing CSC/VPC system;		
	· provide the capability to obtain employee information defined in the Design phase such as employee ID, role and access privileges from Active Directory and, if required, to transmit the (UIL to the zone controllers;		
	· provide various management reports that assess the operational performance of the System, and		
	· provide transaction reconciliation reports as determined by the Commission during Design.		
2.2.2	**Cashless Toll Host System Hardware and Third-party Products**		
291	The Work under this section shall include all labor, materials, and support Services to complete the Design; fabrication; assembly; integration; packaging; delivery; testing, and Acceptance of the primary Cashless Toll Host System Hardware and third-party Software in accordance with the requirements of this Scope of Work.		
292	The Commission shall have ownership of all Hardware, third-party Software and firmware procured, developed, furnished, and installed as part of the Cashless Toll Host System.		
293	The Contrator is responsible for obtaining all required licenses in the name of the Commission. All licenses and media shall be provided to the Commission for all Hardware, third-party Software and firmware. The Contrator shall retain authorized copies (backups) for all Software media to use for periodic system Maintenance, upgrades, or restore, as required.		
294	The Contrator shall furnish and install a complete, fully redundant, Cashless Toll Host System Hardware configuration needed to support the redundancy and performance requirements of this Contract, including but not limited to:		
	· multi-processors		
	· dual, redundant, hot-swappable power supplies;		
	· storage devices, and		
	· storage devices, backup library.		
295	The Cashless Toll Host Hardware solution shall provide high-speed intra system network fabric between all storage, databases, servers, and backup systems.		
296	The System Design and implementation shall ensure the Cashless Tolling System continues to operate without data loss even if any unit of the server configuration fails.		
297	All components, supplies, Software and materials furnished under this Contract shall be new, commercial off-the-shelf (COTS) and field proven, and in revenue operations for two (2) years.		
298	The Cashless Toll Host System server configuration, including all major Hardware elements, shall be of the latest design and incorporate standard commercial products currently in production.		
299	All components procured, furnished, and installed by the Contrator should have the capability of sourcing from multiple Suppliers. The intent is to increase compatibility and reduce maintainability problems.		

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300	Proof of purchase in the form of dated invoice and shipping bills shall be retained and furnished to the Commission in accordance with the requirements of this Scope of Work and Contract for all Hardware purchased by the Contrator.		
301	The Cashless Toll Host System Hardware shall have a minimum manufacturer warranty for five (5) years.		
302	The Cashless Toll Host System Hardware shall be supported for the duration of the Contract after the date of Operational Test Acceptance. During the life of the Contract the Contrator is responsible for ensuring the system is operational in accordance with the performance requirements.		
303	The Contrator shall use proven server configurations that support future upgrades to processors, memory, storage, operating system, database, and other system components. All third-party Hardware and Software and Contrator Software shall be Hardware neutral and shall perform without intervention on any Hardware platform.		
304	The System architecture shall have expansion capability to support a ten (10) year growth in traffic volumes in its installed Hardware which includes support of video tolling at the tolling points. For the purposes of calculation, an average E-ZPass penetration of seventy (70) percent and video transaction rate of thirty (30) percent, with ranges from 60-80% E-ZPass depending on locations throughout the system shall be assumed for the tolling point.		
305	The operating system for the Cashless Toll Host System servers shall be a proven system used widely throughout the United States for intensive database operations and shall be compatible with the Relational Database Management System (RDBMS) and other tools employed.		
306	The operating system for the Cashless Toll Host System servers shall be a multi-user, multi-tasking operating system.		
307	The operating system shall support the redundant Cashless Toll Host System server architecture and all peripherals defined in these specifications.		
308	The operating system shall also support the proposed communications topology, redundant Cashless Toll Host System configuration and Contrator's application Software.		
309	The Contrator shall warranty the operating system for a minimum of five (5) years from the date of Operational Test Acceptance.		
310	The operating system shall have a future upgrade path and shall be supported for the term of the Contract.		
311	The Contrator shall provide and maintain supported versions of the operating system for the term of the Contract and all upgrades of the Cashless Tolling System operating system shall be the Contrator responsibility.		
312	The Contrator shall keep all Software instances throughout all environments at the same configuration and patch level.		
313	The Contrator shall provide a highly reliable and secure RDBMS for the storage of images, video, transaction data, violation data, audit data, and all other data, as applicable, for the retention period specified in the Scope of Work.		
314	Contrator shall provide the latest version of the RDBMS that is field-proven to operate in a transaction intensive environment and shall meet the standards as defined in Attachment 12: Database Standards for the Pennsylvania Turnpike Commission, where applicable.		
315	The RDBMS shall be compatible with the operating system and application Software, and shall support the redundant Cashless Toll Host System server architecture and shall meet the standards as defined in Attachment 12: Database Standards for the Pennsylvania Turnpike Commission, where applicable.		
316	The RDBMS shall have an upgrade path and shall support upgrades to operating system, application, memory, processors, and other components.		
317	The RDBMS shall have Maintenance and Upgrade Services for the term of the Contract.		
318	The Contrator shall provide and maintain supported versions of the RDBMS for the term of the Contract and shall be responsible for upgrading the Cashless Tolling System RDBMS to the latest supported version.		
2.2.2.1	**Central Image Server (Optional)**		
	The provision for a central image server is optional; however, Contrator's image processing solution shall meet the functional and performance requirements of the Scope of Work. The Design shall support latency in the transfer of images to the existing CSC/VPC system and prevent loss of images and video transactions if there are communications or server issues. If the Contrator's solution includes the provision for a central image server, then the central image server shall be located at a Commission Approved location.		
319	The image processing solution shall support, but not be limited to the following general functions:		
	· communicate with all the in-lane LPICPS for the transmission, tracking, reconciliation and processing of all vehicle images and video transactions;		
	· communicate with facility servers (if provided) for the transmission, tracking, reconciliation and processing of all vehicle images and video transactions;		
	· interface with Cashless Toll Host System for the processing and reconciliation of all vehicles images and video transactions;		
	· interface with existing CSC/VPC system for the processing and reconciliation of all vehicles images and video transactions;		
	· support the transfer of images and video transaction to the existing CSC/VPC system without loss of any image or video transaction, and		

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	· provide reconciliation reports as determined by the Commission during Design.		
2.2.2.2	**Data Backup**		
320	The Cashless Toll Host System shall include data backup Software and Hardware that allows remote incremental and full back up of data without manual intervention. Events from the backup Software and status notifications from the backup process shall be reported to the MOMS.		
321	During the installation of the Cashless Toll Host servers, the Contrator shall create an image of the completed server configurations, as well as maintain regular local and remote backups. If there is a catastrophic failure that results in the loss of data, means shall be provided to reconfigure the servers without disruption to Cashless Toll Host System operations.		
322	The backup Software shall be capable of displaying the backup data in a user-friendly and readable form as defined during the Design phase.		
323	The Contrator shall provide a solution for data backup storage locally and off-site.		
2.2.2.3	**Archive and Purge Control Mechanisms**		
324	Provide the capability for fully automated and configurable data purging in accordance with the Commission's data retention requirements as defined in Attachment 8A: PTC Records Management Manual, Attachment 8B: PTC Records Retention Schedule and during the Design phase.		
325	Purge routines shall be configurable for each impacted data elements, including but not limited to:		
	· transaction data;		
	· images;		
	· video;		
	· System logs;		
	· MOMS data, and		
	· interface files.		
326	Servers shall retain transaction and summarized data, images, MOMS data and system logs, in accordance with the retention procedures, including but not limited to:		
	· Cashless toll transactions shall be retained online for a minimum of twenty four (24) months and then archived and purged;		
	· compressed images associated with class mismatch transactions shall be retained online for a minimum of ninety (90) days and then archived and purged;		
	· video transactions and images (compressed video transaction image and region of interest{if implemented}) online for a minimum of six (6) months and then archived and purged;		
	· DVAS video shall be retained online in accordance with the requirements of this Scope of Work;		
	· summarized data shall be retained online for the term of the Contract;		
	· system logs shall be retained online on the System for at least ninety (90) days and then archived and purged;		
	· All security logs shall be retained online for at least one (1) year and then archived and purged;		
	· MOMS detailed data shall be retained online for a minimum duration to ensure MTBF requirements are being met or at least twenty-four (24) months, whichever is greater;		
	· MOMS summary data shall be retained online for the term of the Contract, and		
	· all other data shall be retained on the System for ninety (90) days and then archived and purged.		
327	Status and other events from the archival process shall be reported to the MOMS. No transactions shall be deleted unless confirmed to be successfully archived.		
328	Storage shall be sized to accommodate all data to be retained online as specified in this Scope of Work and for the restoration of selected archived data (two months minimum).		
329	Authorized Users shall be able to report on restored data.		
2.2.2.4	**Maintenance Access and Application Access**		
330	The Cashless Toll Host application shall run on existing workstations and laptops and Commission Authorized Users shall use their workstations/laptops to access the System. The Contrator is not required to procure, furnish, and install Commission workstations/laptops as part of the Cashless Toll Host System.		
2.2.2.5	**Maintenance Access**		
331	The Contrator shall procure, furnish, and install the required laptops, keyboards, video monitors, mouse(s), and KVM switches at the In-lane and Cashless Toll Host Systems locations to allow the Contrator technical staff to access all servers, controllers, computers, and devices in order to perform diagnostics and other Maintenance activities.		
332	All maintenance Hardware and Software installed on the In-lane and Host Systems shall comply with Commission security requirements defined in Attachment 7: PTC Cashless Tolling Security Standards.		
2.2.2.6	**Commission Access**		
333	Any Commission authorized workstation/laptop connected to the Commission System network shall be able to access to the System application.		
2.2.2.7	**Printers**		

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334	The Commission shall have the ability to print to any printer connected to the Commission System network. The Contrator is not required to procure, furnish, and install any printers for the Commission as part of the Cashless Toll Host System.		
2.2.2.8	**Communications Equipment**		
335	The LAN within a toll equipment building shall be connected by CAT6 (or higher) cabling and the LAN between Site toll equipment buildings shall be fiber. The WAN connectivity between the toll equipment buildings at each Cashless Toll Site and PTC Data Centers shall be provided by others. The Contrator shall be responsible for providing and obtaining the connectivity from any primary or secondary Cashless Toll Host locations to the PTC Data Center.		
336	The Cashless System at the toll zones shall be connected and communicate to the primary and secondary Cashless Toll Host System and the existing CSC/VPC system.		
337	The Contrator shall procure, furnish and install all required Tier 1 communication Equipment at the toll equipment building to support the Cashless System LAN. All LAN communications Equipment procured, furnished, and installed under this Contract shall be able to communicate with the Commission firewall and router.		
338	The Commission is responsible for providing a WAN demarcation point (Ethernet hand off) at each Cashless Toll Site. The Contrator shall work with Commission IT staff to make the necessary connections and validate the connectivity between the Cashless Toll Site Systems and the Cashless Toll Host Systems. The LAN equipment at a Cashless Toll Site, its configuration, and the connection of the LAN equipment to the WAN demarcation point as shown in Attachment 3b: PTC Communications Network Responsibilities shall be the responsibility of the Contrator. Network addressing and connectivity will be coordinated with Commission IT staff.		
339	The Commission is responsible for providing a demarcation point (Ethernet hand off) in the Commission's Data Center to the primary Cashless Toll Host System site. The Contrator shall work with Commission IT staff to make the necessary connections and validate the connectivity between the PTC Data Center and the Cashless Toll Host System site. The LAN equipment at the primary Cashless Toll Host System site, its configuration, and connection to the demarcation point as shown in Attachment 3b: PTC Communications Network Responsibilities shall be the responsibility of the Contrator. Network addressing and connectivity will be coordinated with Commission IT staff.		
340	The Contrator may install the secondary Cashless Toll Host Systems at a Contrator location within the contiguous states of the United States as Approved by the Commission. The secondary Cashless Toll Host System can be housed in a Commission Approved privately hosted Cloud site. The Contrator is responsible for securing the connectivity from such secondary location to the PTC Data Center. If a cloud environment is desired, the Contrator must work with the Commission to determine appropriate architecture and security measures.		
341	The Contrator shall work with the Commission in designing the interfaces between the Cashless Toll Host System, the existing CSC/VPC system, the PTC Toll Host system and SAP.		
342	The Contrator shall work with PTC in designing the interfaces between the In-Lane Systems and the existing CSC/VPC system.		
343	Network monitoring Software shall be procured, furnished, and installed on the MOMS server to monitor the System LAN status and communications, including the connections to the PTC Toll Host system, the In-lane Systems, the CSC/VPC system and SAP. All network alarms shall be reported to the MOMS.		
344	If communications to any element of the Cashless Tolling System is degraded or down an alarm shall be generated and reported to the MOMS.		
2.2.3	**Cashless Toll Host System Software**		
	The Cashless Toll Host System Software shall support the functionality detailed in this section and shall meet the Commission operational requirements set forth in this Scope of Work and Contract for the Term of the Contract.		
2.2.3.1	**Data Communications and Interface Requirements**		
345	All transactions, images and messages transferred between all subsystems shall be guaranteed and have the required data validation Protocols to confirm the accuracy and validity of data transfer.		
	The Cashless Toll Host System shall support the interfaces specified in this Scope of Work including, but not limited to:		
	· Interface to the zone controllers: If the Contrator's solution does not include a facility server, the Cashless Toll Host System shall receive and store all the messages from the zone controllers in real-time. It shall transmit all data required by the zone controllers to support its operation, including the UIL and TSL. All data sent to and received from each zone controller and the Cashless Toll Host System shall be acknowledged and confirmed.		
	· the VEL shall be transmitted from the Cashless Toll Host System to the In-lane System to support on-site enforcement (if exercised).		
	· Interface to the facility servers (if provided): If the Contrator's solution includes a facility server, the Cashless Toll Host System shall have the capability to transmit all data to and receive data from the facility servers as required in this Scope of Work to support lane operations. All data sent to and received from each facility server at the Cashless Toll Host System shall be acknowledged and confirmed.		

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346	· Interface to the PTC Toll Host system: The Cashless Toll Host System shall have the capability to transmit detailed transactions and alarms to the PTC Toll Host system in batch mode (at configurable intervals/transactions) in accordance with the Approved ICD.		
	· Interface to the existing CSC/VPC system: The Cashless Toll Host System shall have the capability to transmit AVI transactions to the existing CSC/VPC system in real time and in batch mode (at configurable intervals/transactions) in accordance with the Approved ICD.		
	· Interface to the image server(s): The Cashless Toll Host System shall track and reconcile image transmission and transfer status.		
	· Interface to SAP: The Cashless Toll Host System shall transmit monthly toll transaction, account, and other GL files received from the CSC/VPC system. Interface to SAP shall be further defined during the Design phase.		
	· Interface to the MOMS: The Cashless Toll Host System shall interface with the MOMS to transmit alarms and Cashless Toll Host System operational status including recovery messages.		
	· Interface between the MOMS and the current Commission diagnostic monitoring system, based on the Approved ICD.		
347	The Cashless Toll Host System shall receive a comprehensive TSL from the existing CSC/VPC system once a day and incremental TSL/updates not more frequently than every sixty (60) minutes (configurable).		
348	Toll rate tables shall be transmitted to the CSC/VPC when rate changes are initiated on the Cashless Toll Host System.		
2.2.3.2	**Version Tracking Requirements**		
349	The Cashless Toll Host System shall maintain records of the last 20 versions of the TSL, toll rate tables, VEL (if exercised), UIL, and lane configuration files that it received and/or created and that were successfully downloaded to the lanes. Receipt of files from the existing CSC/VPC system, their version, time of receipt and processing status shall also be tracked.		
350	Reports and screens shall be made available to verify the versions and the file download status. Failure in the transmission of any data to a lane shall result in a failure message being logged and reported to the MOMS.		
351	The system shall provide the capability to track the versions of lane executable programs installed at each toll zone location.		
2.2.3.3	**Transaction Audit and Verification**		
352	The Cashless Tolling System shall perform an independent automatic audit and verification process that confirms all vehicles traveling through the toll lane are detected and reported as transactions; all transaction transmissions between the zone controller and Cashless Toll Host System are successful and the System has the screens and reports to validate the audit trail.		
353	If the validation process fails for any reason, failure messages shall be created and reported to the MOMS. If the audit process determines that vehicles or transactions are missing, the missing information shall be identified and reported to the MOMS.		
354	If the audit process is successful then the audit for the location for the Revenue Day shall be deemed “complete” and System shall track this status of the audit on reports.		
355	Once the Revenue Day is “complete” the data reported for that day should not change. Any condition for example toll waiving that result in changes to the data shall be identified and Authorized Users alerted.		
2.2.3.4	**Data Summarization**		
356	During the Design process and based on Commission Business Rules and reporting requirements, the system shall perform data summarization.		
2.2.3.5	**Diagnostics**		
357	The Cashless Toll Host System shall provide self-diagnosis functions to detect and report on the status and functioning of the Cashless Toll Host System Hardware devices; third party Software; communications; processes; tasks, and Software applications, as defined in the Commission Approved Design Document.		
358	All Hardware and Software failures detected shall be reported to the MOMS.		
2.2.3.6	**Data Security**		
359	The Contrator shall ensure that any transactional data records, once entered into the System, cannot be deleted or changed.		
360	Data records and files shall only be appended to and not edited or deleted as determined by the Commission during the Design phase.		
361	All System access/entry, logins, and modifications (for example, flagging actions) shall be recorded and unauthorized access shall be prevented, logged and reported to Commission IT Security within 12 hours of detection.		
2.2.3.7	**Transaction Pre-processing**		
362	The Cashless Toll Host System shall ensure all transactions transmitted to the existing CSC/VPC system comply with the ICD specifications and Commission Business Rules.		
363	The Cashless Toll Host System shall pre-process all transactions in accordance with the Approved Business Rules in order to filter incorrect transactions that may result from Equipment failures and lane logic issues.		

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364	Transactions that should not be processed further at the existing CSC/VPC system shall be identified and flagged prior to transmission and then transmitted to the existing CSC/VPC system as defined during the Design phase.		
365	The Cashless Toll Host System shall identify exceptions, anomalies and other conditions determined during the Design phase in the event they have not been filtered at the zone controller, for example, same transponder read within configurable conditions.		
366	In scenarios where multiple transponders with valid status are reported, all transponders can be transmitted to the existing CSC/VPC system and the existing CSC/VPC will post the transaction in accordance with Commission Business Rules.		
367	In cases where there is a Transponder read data and a video transaction created for a vehicle (in case of Buffered Transponder Reads or lane logic issues) the Cashless Toll Host System shall identify the transaction that needs to be terminated based upon configurable parameters Approved during the Design phase. In case of Buffered Transponder Read transactions, the Transponder read time shall be used as the transaction time.		
368	Based on the results of the pre-processing, an Exception List shall be generated and transmitted to the existing CSC/VPC system in accordance with the Approved ICD that identifies video transactions that needs to be terminated at the existing CSC/VPC system and further processing on these transactions stopped.		
369	Alarm messages shall be created and reported to the MOMS in the event such exceptions identified in this section exceed a configurable threshold.		
2.2.4	**Cashless Toll Host System Application Software**		
370	The Contrator shall develop, furnish, and install a single, role-based, GUI application Software for the Cashless System that supports all user functions for the Cashless Toll Host System, including the MOMS and DVAS.		
371	Based on the user's access privileges obtained from Active Directory the appropriate menus, screens, tabs, reports and other system functionality shall be made available.		
372	Changes to the System data and parameters shall be through screens and only Authorized Users shall have access to these screens.		
373	All access to the application and changes to the data shall be recorded and tracked, and the System shall provide an audit trail for all data modifications and parameter changes.		
374	Authorized Users shall have access to the data modifications and parameter changes initiated by users.		
2.2.4.1	**Graphical User Interface (GUI) Requirements**		
	The GUI design must include accepted industry design standards for ease of readability, understanding and appropriate use of menu-driven operations, user customization and intuitive operation.		
375	The Contrator shall meet all Commission IT Security standards and practices in the design of the GUI for the Cashless Toll Host application.		
376	The GUI design and development shall incorporate human factors and usability engineering and be optimized for speed, as well as provide the following controls, including but not limited to:		
	· menus (such as pull down, popup, cascading, leveling, etc.);		
	· windows (allowing for multiple windows within the application, such as to navigate back without having to re-enter information)		
	· informational messages;		
	· positive feedback;		
	· exception handling and error dialogs, including logging the error;		
	· control icons, links and action buttons;		
	· data entry fields, combo boxes, check boxes;		
	· display (read-only) fields, and		
	· general and context-specific help menus.		
377	Data entry screens shall have configurable mandatory fields that require data entry prior to continuing through the process.		
378	Provide field-level validation (server-side enforced) and format verification upon exiting data fields applicable to pre-defined formats or standards, including but not limited to:		
	· alpha-numeric;		
	· date;		
	· time;		
	· special characters;		
	· length;		
	· lane and plaza ID, and		
	· Transponder numbers.		
379	Provide other formatting masks (server-side enforced) as configured by the System administrator (visible to certain users but masked for other users), which can be applied to any other field in the GUI.		
	Provide field-level "tooltips" or other interactive help, Configurable by the System administrator, that provide specific guidance on any field presented, including but not limited to:		

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380	· alpha-numeric fields;		
	· date fields;		
	· time fields;		
	· special characters;		
	· username and password;		
	· length restrictions;		
	· lane and plaza ID, and		
	· Transponder fields.		
381	Online help shall be provided for each screen, each editable field and each selectable option within each screen.		
2.2.4.2	**Screens and Report Access**		
382	Provide the capability to assign users access privileges to System reports based on user level/role, as determined by the Commission during the Design phase, to the Cashless Tolling System application.		
383	Provide the capability to assign read-only rights to roles so that users belonging to that role will not be allowed to enter any data.		
384	Provide the capability for Authorized Users to maintain roles and permission access to the System.		
2.2.4.3	**Cashless Tolling System Screens and Reports**		
385	All data entered or generated in the System shall be retrievable (on-demand and scheduled) through reports and screens.		
386	Reports menu shall be organized by category of reports and shall be intuitive to users and easily accessible based on user access.		
387	Data shall be summarized to improve report generation performance and to track changes in data for as-of-date reporting.		
388	Reports and screens available through the System shall have various selection, group by, and sort criteria, and shall be easily configurable.		
389	The location selection criteria shall include but not be limited to District, Highway, tolling point, lane, and direction of travel to be defined during the Design phase.		
390	Provide the capability to generate the same report by hour, day, date range, weekly, monthly, quarterly, yearly (fiscal and calendar), year-to-date and comparative.		
391	Provide the capability to present report data as an accumulation or individually for the selected criteria. This capability shall be configurable and applicable to District, Highway, Cashless Toll Plaza, and different transaction types whereby the user can choose the data to be presented as an accumulation of, for example grouped by all Cashless Toll Plazas and/or payment types or as individual Cashless Toll Plazas and/or payment types.		
392	Reports developed shall allow the Commission to audit and reconcile data transmitted between various subsystems within the Cashless Tolling System, and with the PTC Toll Host system and existing CSC/VPC system in accordance with this Scope of Work.		
393	Provide ad-hoc reporting tool capabilities to Authorized Users to allow the creation and execution of custom reports, including but not limited to:		
	· drag-and-drop field functionality;		
	· drill down functionality;		
	· filtering;		
	· parameter prompting;		
	· formula support;		
	· grouping;		
	· sorting, and		
	· stored procedure and function support.		
394	The ad-hoc reporting tool shall be COTS Software and be the latest version at the time of Acceptance testing and field-proven to operate in a transaction intensive environment.		
395	The ad-hoc Software shall be compatible with operating system standards and shall be patched and upgradeable to new versions of the Software and operating system.		
396	Ad-hoc report templates created by Authorized Users shall be saved and made available to all Authorized Users.		
397	All reports shall show the status of the validatioNAudit process, as defined by the Commission and other relevant statuses that indicate items, including but not limited to whether:		
	· all data has been obtained from the lanes;		
	· the data has been re-summarized;		
	· the transactions have been transmitted to the existing CSC/VPC system, and		
	· the report is complete.		
398	The time of the last transaction processed shall be included in all applicable reports to assist with the reconciliation and audit.		

Functional Requirements - Addendum #1			
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399	Once the audit process is completed and Revenue Day is closed, the data on reports for the day shall not change unless data is re-summarized.		
400	All reports shall include individual totals, sub-totals, and grand-totals as appropriate.		
401	Reports shall have the capability to select the date type, including but not limited to:		
	· revenue date;		
	· transmission date;		
	· as-of date;		
	· process date;		
	· transaction date, or		
	· a combination thereof, as designated by the Commission.		
402	Reports shall use conditional formatting to identify exceptions and data that are outside the normal trend.		
403	Provide reporting output in various formats (both compressed and uncompressed), including but not limited to:		
	· Portable Document Format (PDF);		
	· plain text format (TXT);		
	· rich text format (RTF);		
	· Microsoft Excel (2010 version and later);		
	· delimiter-separated values;		
	· hypertext markup language (HTML), and		
	· extensible markup language (XML).		
404	A report generation feature shall be available for configuration and shall permit Authorized Users to request selected reports for auto delivery by email or to a designated server according to a routine or custom interval, such as the start of the Business Day or at other appropriate times as designated or requested by the user as determined in the Design phase.		
405	Data from summary reports scheduled to run daily shall be automatically exported daily to a specified file format and made available on the Commission designated server as defined during the Design phase.		
406	Capability shall be provided to drill down all high-level reports to the next level of detail and to event level details as required as defined in the Design phase.		
407	Authorized Users shall have the capability to display and review the LPICPS images and DVAS video and event details associated with the selected transaction from the drilled down details.		
408	Authorized Users shall have the capability to view the contents of files that are received by the Cashless Toll Host System and transmitted by the Cashless Toll Host System in a readable format. If files are compressed or encrypted, the necessary Software tools shall be provided to view their contents. If the user selects a specific file, the contents of the file shall be displayed and the user shall have the ability to save the contents at minimum as a .csv file, xml, txt and in a useable Excel format as Approved.		
409	Capability shall be provided to present data in graph forms and chart types and the user shall be able to select presentation form from a variety of graphic styles.		
410	Data shall be organized and summarized in a manner to allow for report generation within no more than two (2) seconds for daily reports, and no more than twenty (20) seconds for monthly and annual reports, of a report generation request.		
411	The Contrator shall support the creation of additional reports and/or the modification of implemented reports, as needed after the initial deployment and implementation of the System. . It is anticipated that no more than one hundred (100) additional reports will be required for the term of the Contract.		
2.2.4.4	**Cashless Toll Host Reports**		
	Existing Host reports are included in Attachment 9: Existing PTC Host Reports for reference.		
412	The Cashless Tolling System shall provide reports to audit and reconcile the System, provide traffic and revenue trends, validate System performance and perform historical reporting on detailed and summarized data imported from the existing PTC Toll Host.		
413	Report Designs and templates shall be presented by the Contrator and reviewed by the Commission during the Design phase and Approved.		
Transaction and Revenue Reports			
414	Transaction Summary Reports: These reports show daily, weekly, monthly, quarterly, yearly, and comparative transaction and revenue, by vehicle class and payment type. Transaction and revenue reports shall be summarized and detailed. The summary data shall drill down to the Transaction Detail Report.		
415	Transaction Detail Report: The transaction details shall be provided in this report including lane status, equipment status, transaction status and various lane flags. Users shall be able to access the bit descriptions in all cases where information is coded. The report shall be used to investigate discrepancies and issues.		
416	Accounting Revenue and Associate Traffic Report: This report shows accounting revenue and traffic counts by Revenue Dates for the vehicle class categories.		

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417	Bedford/Breezewood Special Report: The report shows monthly traffic and revenue counts for current year and previous year usage for travel between Bedford and Breezewood. Sub-totals and grand totals provide a breakdown by transaction type, for example E-ZPass, Video and Non-Revenue and are grouped by vehicle class.		
418	Class Report: This report shows information related to traffic and revenue by vehicle class by transaction types, for example E-ZPass, Video and Non-Revenue This report is used by management and operations to report on traffic and revenue by vehicle class.		
419	Executive Summary Traffic and Revenue Report: This report shows daily traffic counts and revenue amounts by revenue category, for example E-ZPass and Video by vehicle class category, grouped by shift, selected day totals, previous day totals, percentage of increase/decrease and month to selected day totals. This report is used to show the increase and/or decrease in traffic counts and revenue compared to the previous days' totals using the breakdown by revenue types. Data in this report shall also be represented graphically to include selected day traffic and revenue statistics; daily revenue and traffic comparisons by vehicle class and revenue type including selected day; previous day; month to selected day average and prior week day. Backup of the summary data by District and tolling point shall be included.		
420	Finance Traffic and Revenue Details Report: This report shows traffic and revenue counts by tolling point and is grouped by vehicle class categories for the specified highway(s) selected. This report provides operations and management with traffic and revenue totals for each tolling point by vehicle class categories for a specified date range.		
421	Traffic and Revenue Report: This report shows transaction by transaction type, for example E-ZPass, Video and Non-Revenue for tolling points in each District for the selected highway(s). The data is grouped by vehicle class categories and tolling point. A summary is provided at the end of the report by vehicle class category and transaction type.		
422	Traffic and Revenue Comparison Report: This report shall provide a comparison of current year monthly traffic and revenue data with the previous year with percentage increase/decrease and includes selected highway(s) by district and tolling point. Similar to the traffic and revenue report above, the report includes a breakdown by vehicle class category. The report is further divided into sub-groups by revenue category, for example E-ZPass and Video.		
Traffic Reports			
423	Average Lane Throughput Report: This report shall display hourly traffic volumes for each lane grouped for each tolling point within the selected District. Hourly traffic volumes shall be totaled by lane for the day for each tolling point to calculate the average lane throughput at each tolling point.		
424	Counts and Percentages Report: This report shall display vehicle counts and percentages of each count grouped by vehicle class category and vehicle class for each revenue category for example E-ZPass and Video for each tolling point. This is a daily report and is grouped by tolling point for the selected highway(s) and district. This report shall drill down to the Counts and Percentages by Direction Report.		
425	Counts and Percentages by Direction Report: This report shall display vehicle counts and percentages of each count grouped by vehicle class category and vehicle class for each revenue category for example E-ZPass and Video for each tolling point. This is a daily report and is grouped by tolling point and direction for the selected highway(s) and district.		
426	Lane Traffic Counts and Statistics Reports: This report shall provide AM and PM traffic counts and statistics by hour for each Highway and tolling point by revenue category for example E-ZPass and Video. The report shall also include AM and PM peak hour statistics and provide a grand total by revenue category for all peak hour. The total percentage of E-ZPass transactions with the AM/PM breakdown and identification on the E-ZPass high hour and lane shall be included.		
427	Finance Traffic Details Report: This report shall display traffic counts grouped by tolling point and vehicle class category and include grand totals for each vehicle class category.		
428	Plaza By Lane Report: This report shows traffic counts by lane for each tolling point by vehicle class categories and vehicle classes. This report includes the summary by tolling point for the selected District. This report is used by operations staff in analyzing traffic volumes by lane and vehicle class.		
429	Market Penetration Report: This report shows traffic counts by revenue category, for example E-ZPass and Video for AM/PM peak hours and includes the E-ZPass penetration percentage.		
430	Speed Reports: This report shows the traffic count information per lane by speed segments. This report is used by operations staff to monitor traffic flows and speeds.		
431	Traffic Counts Report: This report shows traffic count information grouped by revenue category for example E-ZPass and Video with breakdown by transaction types and sub-totaled by tolling point and vehicle class categories. The combined counts include a breakdown by revenue and nonrevenue transactions. This report shall drill down to the Traffic Counts by Direction Report.		
432	Traffic Counts by Direction Report: This report shows traffic count information grouped by c revenue category for example E-ZPass and Video with breakdown by transaction types and sub-totaled by tolling point, direction and vehicle class categories. The combined counts include a breakdown by revenue and nonrevenue transactions.		

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433	Vehicle Count Through Closed Lanes Report: This report shall display tolling point, lane and detailed transaction information for vehicles that travel through a closed lane based on the date range, tolling point and lane.		
434	Vehicles and Mileage Report: This report shows traffic counts for all vehicle classes in addition to vehicle class category for each revenue category between tolling points and total distance traveled for the selected criteria. The report includes a summary page with traffic between tolling points and total miles traveled. Each summary shall be grouped by vehicle class category and revenue category, for example E-ZPass and Video.		
System Audit Reports			
435	Transaction Audit Report: This report shows the status of the transaction transmission from the zone controllers to the cashless tolling host, the audit status, the failed transactions, duplicate transactions, all exceptions, and missing transaction sequence numbers at each of the tolling points. The communication status between the zone controllers to all of the subsystems shall be displayed. The report shall also include the date the transactions were received at the Cashless Toll Host and the days lagging. It also shows the transmission status of the transactions to the PTC Toll Host system.		
436	System Audit Trail Reports: Weekly and monthly reports shall be made available that show the modifications made by the users to system parameters and ability shall be provided to obtain the details of the modifications.		
437	System Exceptions Report: The System Exceptions report shall display transactions that are considered exceptions, including but not limited to duplicate transactions; dual transponders; Cashless Toll Host filtered transactions and non-interoperable transponder reads. Exception handling errors and the disposition of these exceptions shall also be displayed along with the transaction.		
438	Image Reconciliation Report: The Image Reconciliation report shall provide the ability to match transactions by type to images and to help identify missing images. These reports shall not only reconcile the actual images saved to what was expected but also verify that the images were successfully transmitted from the lanes to the image server(s) and on to the CSC/VPC system. Data on this report shall match other transactions summary reports. This report shall drill down to the Image Reconciliation Detail Report.		
439	Image Reconciliation Detail Report: This operational report list the information on the video transaction for a user defined transaction date/time range. Capability shall be provided to show only records where an image is expected and if the image is expected if the image has arrived yet.		
440	Transactions Reconciliation Reports: Yearly, quarterly, monthly, weekly, and daily reports that show AVI and video transaction transmission reconciliation for all of the tolling points. These reports shall validate that all of the AVI and video transactions received from the lanes were posted to the Cashless Toll Host System and transmitted to the PTC Toll Host system. Reports shall be available by transaction day and transmit day, and transmit day reports shall show the files transmitted and acknowledged by the receiving system.		
441	Fare Schedule Report: This report shall provide the fare schedule for the selection criteria. The fare amount for each vehicle class will be displayed by tolling point for the effective date selected. The report shall be used by operations and management staff to verify future, current and past versions of released and unreleased fare schedules based on the effective date selected. Historical fare information shall be used in determining future changes in fares. It may also be used to reconcile past transactions amounts.		
442	Hardware Status Report: This report shows the Hardware status codes and descriptions based on the selected date range, Highway, District, Plaza, Lane and type of Hardware failure. This report allows maintenance staff to audit the state of all Hardware components in the lanes.		
443	Transaction Number Gap Report: This report shall provide information on gaps in transaction numbers based on tolling point and lane for the specified date range.		
444	Unusual Occurrence Report: This report shall be used to provide operations and maintenance staff with information regarding unusual occurrences with lane data to identify potential Hardware issues, Software issues or other system anomalies. The report shall include the Highway(s), and tolling point and may be filtered by unusual occurrence (UO) code. This report includes lane number, transactions date and time, lane status transaction number and a description of the UO.		
445	Lane Operations Report: This operational report lists and summarizes vehicle transactions and equipment messages that are generated in the lanes. This report is an audit tool that presents all lane activity for a specified location and desired transaction date and time period. Numerous selection and filter criteria shall be provided to help identify problems. Detailed information regarding the transaction and event shall be included.		
446	Transponder Audit Report: This report verifies that transponders are properly read at each cashless tolling location		
Performance Reports			
447	Transponder Status List Transmission Report: The TSL Transmission report shows the status of the TSL transmissions to the Cashless Toll Host System and to all of the zone controllers. Summary information related to the number of transponders, time acknowledged by the zone controller and other data shall be provided to verify results and performance requirements. Time of receipt from the existing CSC/VPC system, time of transmission to the zone controllers and the status of the transmission shall be displayed. Lanes not compliant to the requirements shall be identified.		

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448	Image Transmission Summary Report: This operational report counts the number of images created in the lanes for a user defined image created date range and other criteria. Data displayed include the number of triggered, non-triggered and total images from the lanes and the date the images were received at the image server(s). For each received date, the total images, number of lag days, the percentage of transactions received each day and a cumulative percentage shall be included.		
449	Image Transmission Detail Report: This operational report lists information on images from the lanes for a user defined lane created date. Capability shall be included to show image records where it took longer than a user defined number of hours for the image to arrive at the image server(s).		
450	File Transfer Performance: This operational report lists files that have been created and sent from the Cashless Toll Host System by component for either the created date range or sent date range selected by the user. Information displayed include, file information, created date and time, sent date and time and process time. This report verifies System compliance to performance requirements. File/data transmissions to the lanes shall include confirmation of successful delivery at each lane.		
451	OCR/ALPR Performance Report (if the option to implement OCR/ALPR is exercised): The OCR/ALPR Performance Report shall display OCR/ALPR performance statistics by jurisdiction. Problematic cashless tolling lanes, Plazas and jurisdictions shall be identified. The report shall include a breakdown of the OCR/ALPR performance by confidence levels.		
2.2.4.5	**Cashless Tolling Dashboards**		
452	The Contrator shall provide Dashboards developed during the Design phase to monitor the cashless tolling system. The Dashboards shall include but not be limited to real-time monitoring of tolling point traffic, maintenance data and system performance monitoring.		
453	The Contrator shall provide the capability for Authorized Users to monitor the real-time activity at all tolling points in a pictorial and Dashboard view. There shall be an overview representation of all the highways from which individual highways can be accessed.		
454	The Contrator shall provide Authorized Users the capability to view real time DVAS video and also playback recorded video via the Dashboard. The event data pertaining to the vehicle in the video shall be displayed on the video.		
455	Authorized Users shall have access to the detailed data directly from the pictorial and Dashboard view.		
456	Authorized Users shall have the capability to drill down to each lane to review and monitor detailed events as they occur for each transaction.		
457	Authorized Users shall be able to easily maneuver through screens and view data, and different colors and pictures shall be used to bring critical events to the user's attention.		
458	Summary data by payment type for all Commission toll facilities and by tolling point shall be displayed and users shall have the ability to drill down to the details. If a specific tolling point is selected, transaction and event level data by lane shall be made available and users shall have the ability to view the DVAS real-time video and video transaction images through this screen.		
459	All priority 1 alarms shall be displayed in color and shall be audible to direct attention to the failure.		
460	Authorized Users shall be able to easily identify problems (traffic or Equipment) on the cashless tolling lanes and initiate MOMS work order from this interface.		
461	In addition, the Dashboard shall provide detailed real-time information about the AVI system performance, the AVC system performance, and the LPICPS performance to assist in diagnosing and investigating problems. Data pertinent to traffic monitoring and Maintenance shall be displayed in real-time.		
2.2.4.6	**Remote Operations**		
462	The System shall provide the ability to allow Authorized Users to remotely operate the cashless tolling lanes to support the Commission operations, including but not limited to:		
	· remote update of security patches and Software updates;		
	· download TSL, VEL (if exercised), and any files required to selected zone controllers when there are issues, and		
	· restart a specific zone controller node.		
2.2.4.7	**User Setup and Maintenance Screen**		
	User setup and maintenance is a critical task since the employee access levels/roles created through the System determines what privileges and access rights each employee is granted.		
463	Access to the zone controllers and Cashless Toll Host System including the MOMS and DVAS functions shall be controlled through the user setup interface.		
464	The user list shall be obtained from the Commission Active Directory maintained by Commission IT or from an Approved source at regular intervals as defined during the Design phase.		
465	An operations alert shall be generated each time a new user is detected so that their user roles can added and access to the System defined.		
466	Authorized Users shall have the capability to also create new users through the System.		
467	Through a user setup and maintenance screen, the users shall be designated various access levels/roles based on their responsibilities (job description).		

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468	In the Design phase access levels/roles shall be created and the System shall allow the input and editing of generic job access levels/roles.		
469	The access rights of each role and the ability to add roles and users shall be defined by the Commission during the Design phase.		
470	The user setup and maintenance screen shall be also used to activate and inactivate employees and also terminate them from the System.		
471	The same screen shall also be used to assign and update User ID and PIN/password for access to applications.		
472	Passwords assigned to employees and the password management process shall meet current Commission policy standards.		
473	As soon as the information is saved, the UIL shall be transmitted in near real-time to the various Systems for immediate user access.		
2.2.4.8	**Toll Rates and Schedule**		
474	The System shall provide Authorized Users the capability to create and manage toll rates and schedules.		
475	At a minimum, capability shall be provided to establish toll rates based on Highway, tolling point, vehicle class, and payment type and shall support time of day and holiday toll rates as defined during the Design phase.		
476	Authorized Users shall have the capability to pre-establish the effective date/time the toll rates will be enabled. The System shall permit the Commission to schedule toll rates and changes in toll schedules in advance of the new rates becoming effective.		
477	Authorized Users shall have the capability to establish a default toll rate to be used in the event of data unavailability or other conditions as determined by the Commission that would warrant the use of the default toll rate.		
478	The System shall record and track the toll rate ID and toll schedule ID and their transmission status for audit purposes.		
2.2.4.9	**Configurable Parameters**		
	All parameters changes shall be Approved by the Commission in accordance with the Commission Engineering Change Order (ECO) Process.		
479	The System shall provide the capability for Authorized Users to modify the configurable System parameters.		
480	Any change shall result in the creation of a new configurable parameter set and each change shall be identified by a unique identifier.		
481	Changes to configurable parameters can be scheduled to take effect immediately or at a scheduled time as determined by the user.		
482	The System shall record and track all changes to configurable parameters for audit purposes.		
483	When a new parameter takes effect, a notification shall be generated and reported to the MOMS.		
2.2.4.10	**Zone Controller Executable Download**		
	All Software changes shall be Approved by the Commission in accordance with the Commission Engineering Change Order Process.		
484	The System shall have the capability to download zone controller executable files and all other files required by the lane for its operations. All Software updates shall be coordinated with the Commission.		
485	Successful download of the files shall be verified and alarm messages generated if any file was not received by any zone controllers.		
486	Where possible, once the Commission has Approved a Software release, all System application updates shall be automated requiring no action by Maintenance personnel.		
2.2.5	**General Requirements for Interfaces**		
	The Contrator is responsible for working with the Commission and the existing Contrators in Designing, developing, documenting, testing and implementing all required interfaces. Electronic interfaces are required to provide connectivity between the existing PTC Systems (PTC Toll Host and CSC/VPC), the Cashless Toll Host System and In-lane Systems. The Contrator shall be responsible for developing the ICDs, and where changes to existing ICDs are required, these documents shall be modified by the Contrator as part of this Scope of Work based on the Contrator solution during the Design phase. The ICDs shall include requirements for data format and transmission, criteria for acknowledgement and validation of transmitted data and procedures for recording and reconciliation, as appropriate for each interface. It is expected that the latest version of the ICDs will be implemented at go-live and that the Contrator shall continue to update the ICDs as appropriate for the life of the Contract.		
487	Provide electronic automated interfaces to the existing systems in accordance with these requirements.		
488	Provide for guaranteed transmission of data for all interfaces.		
489	Provide for one hundred (100) percent reconciliation of the transmitted data and files.		
490	Provide the capability for Authorized Users to access and view the contents of files, including compressed or encrypted files, which are received and transmitted by the Cashless Toll Host System in a readable format. Authorized Users shall have the capability to save the contents of such files.		
	Provide the capability for real-time alerting to the MOMS of interface and data transmission failures, including but not limited to:		

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491	· MOMS Dashboard for managing and monitoring interfaces;		
	· workflow user interface for managing and monitoring steps within each interface;		
	· status and history of executions;		
	· comprehensive scheduling of file transmissions;		
	· comprehensive reporting for inbound and outbound transmissions;		
	· tight integration with the MOMS and notification of failed transmissions;		
	· notification of file transmission and receipt status, and		
	· capability to manually execute a failed transmission.		
492	The Contrator shall utilize secure Protocols Approved by the Commission for the transfer of data and/or files via interfaces defined during the Design phase.		
493	Provide the capability to transmit and receive multiple files during each scheduled batch.		
494	Provide the capability to transmit and receive multiple files in a day.		
495	Utilize file naming conventions that prevent the overwrite of data and/or files. For example, include the date and time of transmission and provide for unique identifiers.		
496	Utilize file handling and processing methods that provide a complete log of the data and/or file transfer process. For example, files that are successfully processed are moved to a processed folder.		
497	Validate records and identify errors in the received data and/or files, including but not limited to:		
	· mandatory fields;		
	· data formats;		
	· data validity (such as tolling points and lane numbers);		
	· duplicate records;		
	· unexpected response;		
	· checksum/record count verification and		
	· incorrect status.		
498	Provide the capability to correct and re-transmit data and/or files.		
499	Provide the capability to process re-transmitted data and/or files automatically or manually by Authorized Users as determined during the Design phase.		
500	Provide the capability to transmit the error details to the transmitting entity, as well as record it in the MOMS.		
501	Provide the ability to identify missing records/transactions/images and request the transmission of such missing records/transactions/images.		
502	Reconcile the transmitted records to the records received and accepted by the receiving entity.		
503	Provide the means to identify interface issues by validating the file transmission process, including but not limited to:		
	· creation and transmission of data and/or a file at the scheduled time, even if there are no records to transmit;		
	· determination if the data and/or a file was transmitted or received at the scheduled time;		
	· creation of alerts to the MOMS if data and/or a file was not created or received at the scheduled time;		
	· creation of alerts to the MOMS if received data and/or a file was not acknowledged;		
	· creation of alerts to the MOMS if records in the received data and/or file had errors when processed;		
	· provide details in real-time to the MOMS of each failed record and		
	· creation of alerts to the MOMS when a response has not been received for individual records within the expected duration.		
504	Provide data and/or file transmission and reconciliation reports as described in these requirements.		
505	Provide a Dashboard that tracks the progress of data and/or file transmissions through each stage and their acknowledgements by the receiving entity, including but not limited to:		
	· transactions eligible for transmission;		
	· file and/or data created with file name;		
	· file and/or data transmitted;		
	· file and/or data received;		
	· file and/or data accepted;		
	· file and /or data rejected;		
	· file and/or data re-transmitted;		
	· number of records in the file and/or data set and		
	· number of failed records.		
506	Provide the capability for Authorized Users to configure the relevant parameters related to file and/or data transmission for each interface.		
507	Monitor the disk capacity where files and/or data are deposited and send an alert to the MOMS and interfaces entities (if applicable) if folders are near capacity (configurable) or full.		
508	Provide the capability to automatically archive successfully processed data and/or files after a configurable number of days.		

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509	Provide the data to reconcile file transmissions.		
510	Conform to any existing ICDs, including any updates required at the time of Design and develop all new ICDs that have been identified as "to be developed". It is the Contrator's responsibility to ensure all ICDs (including existing) are accurate, updated and meet the requirements of the Scope of Work before developing the interfaces.		
2.2.5.1	**Cashless Toll Host System to SAP Interface (Optional)**		
511	The Contrator shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system.		
512	The Contrator shall provide the capability to validate that the received files were successfully transmitted to SAP.		
2.2.5.2	**Cashless Toll Host System Interface to the Existing PTC CSC/VPC System**		
513	The Contrator shall design and develop an interface from the Cashless Toll Host System to the existing CSC/VPC system to transmit receive and acknowledge one hundred (100) percent of all transactional and financial data in accordance with the Approved ICD developed during the Design phase.		
514	The interface shall be capable of receiving the following financial data from the existing CSC/VPC system for transfer including but not limited to:		
	· monthly GL data feeds sent from the CSC/VPC;		
	· monthly CSC surety files, and		
	· monthly CSC tag and account files.		
515	The interface shall be capable of transmitting AVI transactions, Exception List, Non-Revenue License Plate List and toll rates to the existing CSC/VPC system.		
516	The interface shall be capable of receiving TSL and VEL (if option is exercised) files from the existing CSC/VPC system.		
517	The Contrator shall provide the capability to positively acknowledge (ACK) message receipt, negatively acknowledge or reject a message (NACK) and reconcile data transmissions to/from the Cashless Toll Host System.		
2.2.5.3	**Cashless Toll Host System Interface to the Existing PTC Toll Host System**		
518	The Contrator shall design and develop an interface from the Cashless Toll Host System to the PTC Toll Host system to transmit one hundred (100) percent of all transaction in accordance with the ICD to be developed for this interface during Design.		
519	The interface shall be capable of transmitting the following data including but not limited to:		
	· transaction records and		
	· alarms.		
520	The Contrator shall provide the capability to reconcile the successful transmission of the summary data to the PTC Toll Host system.		
2.2.5.4	**Cashless Toll Host System to Facility Server Interface**		
	The provision of a facility server is optional but if the Contrator's solution includes a facility server, then the requirements in this section shall be met.		
521	The Contrator shall design and develop an interface from the Cashless Toll Host System to the facility Servers (if applicable) to transmit, receive and acknowledge one hundred (100) percent of all data in accordance with the Approved ICD.		
522	The interface shall be capable of sending TSL, VEL (if option is exercised), configuration files, Software updates and toll rates (if applicable) to the facility servers.		
523	The interface shall be capable of receiving all transactions, alarms and event messages from the facility servers.		
524	The Contrator shall provide the capability to reconcile the successful transmission and receipt of all data at the Cashless Toll Host System.		
2.2.5.5	**Cashless Toll Host System to Zone Controller Interface**		
525	The Contrator shall design and develop an interface from the Cashless Toll Host System to the zone controllers to transmit and acknowledge one hundred (100) percent of all data in accordance with the Approved ICD.		
526	The interface shall be capable of sending TSL, VEL (if option is exercised), configurations files, Software updates and toll rates (if applicable) to the zone controller.		
527	The interface shall be capable of receiving all transactions, alarms and event messages from the zone controller.		
528	The Contrator shall provide the capability to reconcile the successful transmission and receipt of all data at the Cashless Toll Host System.		
2.2.5.6	**Image Server to Cashless Toll Host System Interface**		
	Reconciliation of images to the video transactions and the status of the transfer of images and video transactions shall be maintained and reported at the Cashless Toll Host System.		
529	The Contrator shall design and develop an interface from the image server(s) to the Cashless Toll Host System to transmit and track the status of the capture of images by the In-lane Systems for each video transaction and the subsequent transfer of images and video transactions to the existing CSC/VPC system.		
530	The interface shall be capable of sending image reconciliation and transfer status data to the Cashless Toll Host System.		

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531	The Contrator shall provide the capability to reconcile the successful transmission and receipt of all images and video transactions at the existing CSC/VPC system.		
2.2.5.7	**MOMS Interface to the Existing Commission Monitoring System**		
532	The Contrator shall design and develop an interface from the MOMS to the current Commission monitoring system in accordance with the ICD to be finalized during Design.		
533	The Contrator shall provide the capability to generate MOMS alarms and work orders based on status received from the monitoring system.		
2.2.6	**Maintenance Online Management System (MOMS)**		
	There shall be a Maintenance Online Management System (MOMS) that supports the Cashless Tolling System Maintenance activities and Maintenance operations.		
2.2.6.1	**Maintenance Online Management System (MOMS) – General Requirements**		
534	Provide a MOMS that supports Maintenance operations for all Software and Hardware provided under this Contract.		
535	Provide a MOMS that monitors, alerts and generates work orders in real-time for all processes, including but not limited to:		
	· communications issues;		
	· file transmission issues;		
	· data exceptions;		
	· Hardware issues;		
	· Software issues or failures;		
	· database issues;		
	· issues with jobs, processes or data flows;		
	· low storage space for each subsystem (configurable thresholds);		
	· CPU utilization (configurable thresholds);		
	· CPU load (configurable thresholds);		
	· file system mounts (if applicable), and		
	· disk IOs.		
536	Provide a MOMS that monitors, alerts and tracks in real-time unusual activity triggered by users and systems, including but not limited to:		
	· video transactions above threshold;		
	· flushed transactions above threshold, and		
	· other anomalies in daily toll operations.		
537	Provide a MOMS that includes but is not limited to the following:		
	· receiving and monitoring status messages of all system Hardware and Software;		
	· receiving and transmitting alarm and status messages from the current Commission monitoring system;		
	· is capable of local work order manual entry or email entry by Authorized Users;		
	· storing data in a relational database to allow for data recovery and flexibility in reporting the raw data (including via Ad-hoc reporting);		
	· tracking device failures and service requests;		
	· assigning priorities and actions to events;		
	· notifying (automatically) Maintenance personnel via reports, text and email;		
	· assigning work orders to Maintenance personnel;		
	· reassigning (manually) work orders to other Maintenance personnel;		
	· escalating (automatically) work orders to other Maintenance personnel;		
	· recording time of acknowledgement by Maintenance personnel;		
	· recording time of acknowledgement by all subsequently assigned Maintenance personnel;		
	· recording time of repair;		
	· recording time of Equipment and process recovery;		
	· recording completion of service calls;		
	· providing automatic alert for work orders not closed out in specified time;		
	· maintaining and tracking Repair Maintenance Activity;		
	· accepting and updating work orders via smart phones entries via secure communications;		
	· tracking all system application Software components and Hardware via an asset management module;		
	· role-based security;		
	· containing an automatic system exception reporting for all processes that are not running;		
	· containing an automatic system workflow exception reporting for all items that are not processing correctly or are hung in the system, and		
	· providing hard copy reports on device failures and trouble resolution status.		
538	Provide a MOMS that interfaces with the Commission SAP to exchange work order creation and disposition data, and Equipment inventory data as defined during the Design phase.		

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539	Provide a MOMS that supports maintenance functions, including but not limited to:		
	· automatic system job/workflow/queue exception reporting and alerting for all elements that are not processing correctly or are hung in the system;		
	· issuing electronic notifications via email or text to Maintenance staff when problems are detected;		
	· prioritization of failures and alerts that is configurable and alert Authorized Users when configurations are changed;		
	· for the calculation of response times, repair times, and down time from the data entered by the Maintenance staff and automatically generated by the system, and		
	· scheduling of preventive Maintenance through the MOMS that generates automatic work orders at the scheduled times.		
540	Provide a MOMS that supports asset management, including but not limited to:		
	· tracking of all system Hardware and Software items;		
	· tracking of all system Hardware and Software locations;		
	· tracking of all system Hardware and Software versions;		
	· tracking of all Maintenance and service agreements;		
	· maintains a list of vendors from where products were procured;		
	· associates the original purchase order number to the individual item;		
	· associates the original vendor number to the individual item;		
	· associates all warranty information to the individual item;		
	· provides an alert prior to warranty expiration, and		
	· provides automatic alert for spare parts levels.		
541	The MOMS will record all configuration data, and will be versioned after each system component change, including application of system patches.		
542	Provide the capability for Authorized Users to access the MOMS screen through the single Cashless Toll Host System GUI.		
543	Capability shall be provided to configure the priority level of each alarm and assign and change the escalation attributes.		
544	Provide the capability to configure the initiation of a notification in the MOMS when an alarm is generated.		
545	Authorized Users shall have the capability to indicate if an alarm should result in the generation of a work order and if an alarm should be considered in performance reporting.		
546	Provide the capability to generate (on-demand and scheduled) daily, weekly and monthly performance reports as determined by the Commission during Design.		
547	Provide the capability to generate operational, management and performance reports from the MOMS that include but are not limited to:		
	· summarized and detailed alarm history;		
	· Maintenance paging and response history;		
	· work order status and tracking;		
	· Equipment inventory and tracking;		
	· Equipment availability;		
	· preventive Maintenance;		
	· pervasive Maintenance;		
	· corrective Maintenance;		
	· response and repair times for each of the priorities and level of Maintenance;		
	· Equipment use history;		
	· Equipment repair history;		
	· total system availability;		
	· sub-system availability for the In-lane Systems and Cashless Toll Host System;		
	· Equipment versions, Software versions, firmware versions and serial numbers for all Equipment installed under this Scope of Work;		
	· incident logs and lost revenue estimates;		
	· Mean Time Between Failures (MTBF) for the preceding and current Maintenance periods and cumulative;		
	· performance reports detailing compliance to the performance requirements;		
	· detailed list of parts replaced as a result of Maintenance actions, with an identification of warranty versus non-warranty replacement;		
	· status of removed parts and Equipment with an aging status for parts under repair or replacement (serial numbers, being repaired in Maintenance shop, purchase replacement part);		
	· performance reports;		
	· an exceptions report summarizing all unusual or significant occurrences during the period;		
	· trend analysis for repetitive failure;		

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	· status of spare parts inventory, and		
	· staffing report detailing positions, staff hours worked and performance.		
548	Provide the capability to export relevant asset management reports for uploading into SAP.		
549	When spare parts inventory is reduced to a configurable threshold quantity, automatic reorder alerts shall be generated.		
550	Provide a MOMS that has the ability to receive information (success or failure), including but not limited to:		
	· backup;		
	· time synchronization;		
	· synchronization of primary and secondary systems;		
	· Software updates and		
	· file downloads.		
551	In order to ensure that all tolling points are functional, all systems are operational, all the processes are working and file transfers are successful, Authorized Users shall have access to the MOMS screens. Capability shall be provided to verify the status of tolling point operations, the System and various file transfers, including the files transmitted and received from the PTC Toll Host system.		
552	Tolling point and System status shall be shown in a pictorial view with the capability to drill down to the device causing the alert and its associated error logs.		
553	The MOMS screen shall show if required files were transmitted to all the lanes, the PTC Toll Host system and the existing CSC/VPC System.		
554	In case of TSL and toll rate tables, the version in use shall be listed.		
555	Authorized Users shall have the capability to re-initiate download in the event transmissions were not successful, for example toll rate tables.		
556	Screens shall be available that show all the alarms generated by the various systems and subsystems, including the operating system and the database.		
557	Failure of all devices, processes, programs, and scheduled tasks shall be forwarded to the MOMS screen that is accessible to authorized staff.		
558	Various events and error logs shall be provided for each program that shall assist the system administrator to investigate problems.		
2.2.6.2	**System Health Monitoring Software**		
559	Provide System health monitoring Software that includes but is not limited to:		
	· tight integration with the MOMS;		
	· Hardware and network health monitoring;		
	· a dashboard that graphically displays component's health;		
	· comprehensive log reporting capabilities, and		
	· integration with existing Commission monitoring Software.		
2.2.6.3	**Time Synchronization**		
560	The Cashless Toll Host server shall be synchronized to a certified source Approved by the Commission using the standard network time protocol (NTP) at configurable intervals, but at a minimum of every five (5) minutes.		
561	The zone controllers, AVI systems, AVC systems, LPICPS, image server(s), OCR/ALPR server (if the option to implement OCR/ALPR is exercised), DVAS, and other servers needed to support the requirements of this Scope of Work shall be synchronized to the Cashless Toll Host server or the Approved certified source.		
562	If needed, synchronization messages shall be sent to devices that do not support off-the-shelf time synchronization Software.		
563	All servers and controllers shall have a primary and secondary source for synchronizing time.		
564	The time synchronization technique shall ensure that duplicate or incorrect transaction times are not possible.		
565	The Cashless Toll System shall have the capability to handle daylight saving time changes.		
2.3	**Test Site**		
566	The Contrator shall install and setup a dedicated test site at a Commission Approved location. that shall be available for testing Software and Hardware changes or upgrades for the term of the contract. The test site shall have the full suite of Equipment and Systems as an operational tolling point, and test transactions and data shall be transmitted to the Cashless Toll Host System test environment. The test site shall be monitored through the MOMS and maintained identical to other tolling point as specified in this Scope of Work.		
2.4	**National Interoperability**		
567	The Cashless Tolling System shall be Designed to accommodate future National Interoperability such that it supports the inclusion of multiprotocol readers and/or the inclusion of multiprotocol transponders. The Contrator solution shall allow for modifying and adapting the Design to incorporate new readers, antennas types and locations, and support the transition to the new interoperable solution with limited interruptions to the revenue collection.		
568	The Contrator shall support the conversion to National Interoperability if it becomes available during the term of the Contract.		

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2.5	**Accuracy Requirements**		
	The Contrator shall provide a Cashless Tolling System that is Designed to meet the accuracy, performance and throughput requirements set forth in this Scope of Work. The testing logistics required to prove adherence to these requirements shall be detailed in the Master Test Plan and the test procedures as set forth in Section VI of the Scope of Work.		
569	The sample size for each requirement shall be the greater of N = log (1 - C) / log (A); or 100,000 transactions for the Cashless Tolling System Operational and Acceptance Test described in Section 6.6; where:		
	* N = Number in the sample		
	* C = Confidence level		
	* A = Accuracy		
	A value of ninety five (95) percent shall be used for the confidence level. Accuracy and confidence levels are expressed as decimals.		
2.5.1.1	**General Requirements**		
570	The Contrator shall provide a Cashless Tolling System that meets an overall accuracy of at least 99.9 percent for vehicle detection and classification, transponder read and association and vehicle image capture and association. The metrics to validate overall accuracy requirements will be a weighted averaging of the subsystems and shall be defined by the following formula: Where: Vehicle Detection Rate, Transponder Association Rate, Vehicle Classification Rate and Image Capture Rate are obtained from the transactions collected during the Cashless Tolling System Operational and Acceptance Test described in Section 6.6. *Overall Accuracy Rate* *= (Vehicle Detection Rate x Vehicle Detection Weight Factor)* *+ (Transponder Association Rate x Transponder Association Weight Factor)* *+ (Vehicle Classification Rate x Vehicle Classification Weight Factor)* *+ (Image Capture Rate x Image Capture Weight Factor)* Vehicle Detection / Transponder Association / Vehicle Classification / Image Capture Weight Factor: 0.40 / 0.15 / 0.15 / 0.30		
571	The Contrator shall provide a Cashless Tolling System that meets the accuracy requirements described below. The Contrator shall validate System compliance to the accuracy requirement by collecting data to the required sample size in live traffic operations as described below for each requirement.		
572	Data collection shall include the use of live traffic and controlled vehicles (vehicles with a known transponder status) intermingled with live traffic to emulate normal operations such as congestion and traffic patterns as specified below for each requirement.		
573	Prior to the start of testing the System shall be confirmed to be fully operational and ready for testing. Transactions that fail to meet the requirements shall be reviewed and audited and anomalies investigated. Exception criteria identified during the Design phase and the development of the test procedures that fall outside the System Design may be excluded from the accuracy calculations.		
2.5.1.2	**Transponder Capture Rate**		
574	A transponder mounted in accordance with the manufacturer mounting instructions shall be captured by the AVI system under all conditions within the Design specification described in this Scope of Work with an accuracy rate as defined by the greater of the E-ZPass Group or manufacturers specifications This requirement applies to all tolling point types based upon the transponder mix collected during the testing period for the Commission Approved sample size.		
2.5.1.3	**Transponder Reporting Accuracy**		
575	A transponder that is detected and read by the AVI reader shall be reported to the zone controller with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of transponder reads collected during live traffic operations.		
2.5.1.4	**1.1.1.3 Transponder Write Performance Accuracy Rate**		
576	The AVI system shall successfully and accurately complete a write operation to associate data with a passing vehicle with an accuracy rate as defined by the greater of the E-ZPass Group or manufacturers specifications under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of transponders captured during live traffic operations.		

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2.5.1.5	**Vehicle Detection Accuracy**		
577	The zone controller shall detect and report vehicles traveling through the tolling point under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.6	**Transponder Association Accuracy**		
578	Every Transponder that is reported to the zone controller shall be assigned to the correct vehicle under all conditions within the Design specification described in this Scope of Work. This requirement applies to all tolling point types based upon the transponder penetration rate collected during the testing period for the Commission Approved sample size. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.7	**Vehicle Classification Accuracy**		
579	The zone controller shall classify all vehicles in accordance with the Commission classification structure traveling through the tolling point with accuracies defined below under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.8	**Image Capture Reporting Accuracy**		
580	The System shall capture, report and correctly associate an image of the vehicle to the correct vehicle as defined in the Commission Business Rules under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations. The resulting accuracy will be used in the calculation of the overall accuracy.		
2.5.1.9	**License Plate Extraction (OCR/ALPR) Accuracy (if the option to implement OCR/ALPR or VEL is exercised)**		
581	For all video transactions without exception, the System shall perform OCR/ALPR on minimum seventy (70) percent of the images to obtain the license plate, jurisdictions and plate type with at least 99.95 percent accuracy of for the States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA. For vehicles identified as requiring front plates the results shall be from the front image. Testing shall require the use of vehicle data collected during live traffic operations.		
2.5.1.10	**Overall Image Quality**		
582	For all video transactions, at least 99.95 percent of the images that are included in the calculation shall have a human readable license plate, jurisdiction and plate type. For vehicles identified as requiring front plates the front image shall be used. Testing shall require the use of vehicle data collected during live traffic operations.		
	A plate shall be considered excluded from Overall Image Quality calculation only when:		
	· the vehicle has no plate;		
	· the plate numbers/letters are not human readable due to damage or obstruction.		
2.5.1.11	Transaction Processing Requirements		
583	All transactions generated by the zone controllers in accordance with the above accuracy requirements shall be reported and transmitted for processing to the Cashless Toll Host Systems with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.		
2.5.1.12	**False Read Processing**		
584	The Cashless Tolling System false read processing (example cross lane reads and duplicate reads) shall be less than 0.001 percent of the transponder transactions under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations and test results will be verified by monitoring the CSC for accurate account posting and anomalies will be investigated.		
2.5.1.13	**Video Transaction and Image Transmission Requirements**		
585	All video transactions and images from the Cashless Tolling System shall be transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.		
2.5.1.14	**AVI Transaction Transmission Requirements**		
586	All AVI transactions from the Cashless Tolling System shall be transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent under all conditions within the Design specification described in this Scope of Work. Testing shall require the use of vehicle data collected during live traffic operations.		
2.5.1.15	**Vehicle Throughput Requirements**		
587	The Cashless Tolling System shall process a minimum of 2,400 vehicles per hour per lane with a video transaction rate of one hundred (100) percent. Testing shall include the simulation of vehicle events that exercise all of the toll collection equipment and devices.		
2.5.2	**Mean Time Between Failure (MTBF)**		
588	The Cashless Tolling System shall be required to meet specific minimum duration requirements for components and subsystems in continuous operation. This time requirement is defined as the Mean Time Between Failure (MTBF). The Contrator shall provide all third-party MTBF on individual components to be used in the System.		

<table>
<tr><th colspan="4">Functional Requirements - Addendum #1</th></tr>
<tr><th rowspan="3">No.</th><th rowspan="3">Requirements</th><th colspan="2">Required Proposer Inputs</th></tr>
<tr><th>Status of Functionality</th><th>Comments</th></tr>
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<tr><td>589</td><td>MTBF requirements for all components of the Cashless Tolling System shall meet the MTBF as specified below in Table II-1:
Table II–1: MTBF Requirements<table><tr><th>Component</th><th>MTBF (hours)</th></tr><tr><td>Redundant Zone Controller</td><td>30,000</td></tr><tr><td>Automatic Vehicle Identification (AVI) System Components</td><td>20,000</td></tr><tr><td>Automatic Vehicle Classification (AVC) System Components</td><td>30,000</td></tr><tr><td>License Plate Image Capture and Processing System (LPICPS) Components</td><td>30,000</td></tr><tr><td>Cashless Toll System Servers</td><td>50,000</td></tr><tr><td>Network Devices</td><td>50,000</td></tr></table></td><td></td><td></td></tr>
<tr><td>590</td><td>The reliability of the System components shall be calculated based on the following MTBF calculation: MTBF = # units x test period (hours)/ # chargeable failures</td><td></td><td></td></tr>
<tr><td>2.5.3</td><td>Availability</td><td></td><td></td></tr>
<tr><td>591</td><td>The Contrator shall meet availability requirements for the following elements of the Cashless Tolling System:
Table II–2: Availability Requirements<table><tr><th>System or Subsystem</th><th>Availability Requirements (Monthly) Percentage (%)</th></tr><tr><td>Toll Zone Lane Systems</td><td>99.95</td></tr><tr><td>Cashless Toll Host System</td><td>99.95</td></tr></table></td><td></td><td></td></tr>
<tr><td>592</td><td>The availability requirements shall be separately calculated and applied to an available lane with all of its subsystems properly functioning and available to collect revenue and send required transactions to the Cashless Toll Host System and images to the image server(s)/CSC VPC systems.</td><td></td><td></td></tr>
<tr><td>593</td><td>The availability requirements shall be separately calculated for the Cashless Toll Host System with all of its devices, Software, applications and processes properly functioning and available to the Authorized Users, successfully transmitting transactions to the PTC Toll Host systems and the CSC/VPC systems, successfully transmitting files to the SAP system and communicating with the in-lane systems.</td><td></td><td></td></tr>
<tr><td>594</td><td>Availability shall be calculated based on the following calculation:</td><td></td><td></td></tr>
<tr><td></td><td>Availability = 100% - [Hours Downtime / (# Days in time period measured * 24)]</td><td></td><td></td></tr>
<tr><td>595</td><td>The Cashless Tolling System compliance to the availability requirements shall be validated during the Operational and Acceptance Test described in Section 6.6 Cashless Tolling System Operational and Acceptance Test.</td><td></td><td></td></tr>
<tr><td>596</td><td>During the Cashless Tolling System Maintenance and Software Support Services, the Contrator shall prove the Cashless Tolling System compliance to the availability requirements as described in Section 7.22 Performance Requirements for the Cashless Tolling System and Liquidated Damages.</td><td></td><td></td></tr>
<tr><td>2.5.4</td><td>Chargeable and Non-Chargeable Failures</td><td></td><td></td></tr>
<tr><td></td><td>For purposes of calculating MTBF and Availability performance requirements for testing, as detailed in Section VI, and for Maintenance performance, as detailed in Section VII, chargeable and non-chargeable failures are defined as follows:</td><td></td><td></td></tr>
<tr><td>2.5.4.1</td><td>Chargeable Failures</td><td></td><td></td></tr>
<tr><td rowspan="5">597</td><td>Chargeable failures include any failures that are not specifically identified as non-chargeable, including, but not limited to the following:</td><td></td><td></td></tr>
<tr><td>· A malfunction which prevents the Cashless Tolling System component (Hardware or Software) from performing its designated function, when used and operated under its intended operational and environmental conditions as detailed in this Scope of Work.</td><td></td><td></td></tr>
<tr><td>· A malfunction that poses a threat to the safety of the Cashless Tolling System components, PTC customers, employees or others.</td><td></td><td></td></tr>
<tr><td>· An occurrence where data is not successfully transmitted between the lanes and the Cashless Toll Host System and images from the lanes to the image server(s) unless such failure is due to the WAN provided by the Commission.</td><td></td><td></td></tr>
<tr><td>· A failure of Equipment or Software that allows data loss to occur on the Cashless Tolling System.
· A failure of Equipment or Software that allows revenue loss to occur on the Cashless Tolling System that is not already accounted for as a separate performance failure.</td><td></td><td></td></tr>
</table>

Functional Requirements - Addendum #1			
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	· Software anomalies and bugs that affect the performance and operation of the Cashless Tolling System.		
	· Shutdown or unavailability of the Cashless Tolling System unless specifically directed by the Commission for reasons not under the control of the Contrator.		
	· Failure to properly register or report a transaction.		
	· Failure to properly reconcile the Cashless Tolling System.		
	· Failure to electronically send or receive transaction information.		
	· Failure to generate the reports required to reconcile and audit the System.		
2.5.4.2	**Non-Chargeable Failures**		
598	Non-chargeable failures shall include:		
	· force majeure, as defined in the Contract Documents;		
	· vandalism;		
	· failure of a test facility or test instrumentation;		
	· failure of a component the Commission has responsibility;		
	· System component failures caused by externally applied stress conditions outside of the requirements of this Scope of Work;		
	· System component failures caused by environmental or operating conditions outside of the requirements of this Scope of Work;		
	· normal operating adjustments as allowed in the Test Procedure or Maintenance Plan, as applicable, and		
	· failures that are customer or user induced.		
III.	**Cashless Tolling System Transition**		
	All Commission facilities including barrier, ramp and the mainline will be transitioned to cashless tolling in accordance to Attachment 10: Cashless Tolling Concept Plan and the Approved project schedule. The Contrator's installation and transition plan shall support the conversion of the existing toll collection system to the Contrator's Cashless Tolling System.		
3.1	**Cashless Tolling System Transition – General Requirements**		
599	The Contrator shall accommodate the various installations of the Cashless Tolling System implementation in accordance with the Approved schedule.		
600	All changes to the System to accommodate technology upgrades and meet the Contract requirements shall be the responsibility of the Contrator.		
601	The Contrator schedule shall be sufficiently flexible to accommodate modifications or changes such as early completions or delays in start or completion of phases that would normally be expected in a multi-phase, multi-Contrator construction schedule.		
3.2	**Cashless Tolling System Implementation**		
602	The Contrator shall procure, Design, test, and install the Cashless Tolling In-lanes Systems, including the redundant Cashless Tolling In-lane System Hardware, Software, Equipment, Interfaces and communications provided in the toll equipment building at each tolling point.		
603	The Cashless Toll Host Systems shall be tested and interface testing completed prior to commencing Onsite First Installation Test (OFIT) for the Cashless Tolling System at the initial implementation.		
604	The installation and Commissioning of all cashless tolling point implementations shall be in accordance with the Approved Transition Plan.		
3.3	**Transition to Cashless Tolling**		
3.3.1	**Cashless Tolling Transition Plan**		
605	The Contrator shall provide a detailed Transition Plan for Commission Approval that addresses all critical transition elements and activities associated with the installation and implementation of the Cashless Tolling System, including Cashless Tolling In-lane Systems; Cashless Toll Host Systems, and interfaces to the PTC Toll Host system and the existing CSC/VPC system.		
606	The Transition Plan shall address the integration and interface of the Cashless Toll Host System to SAP when all existing facilities are converted to cashless tolling and the existing PTC Toll Host system is de-commissioned.		
607	The Transition Plan shall address the migration of data from the current PTC Toll Host to the Cashless Toll Host System for new facilities as well as when existing facilities are converted to cashless tolling and the existing PTC Toll Host system is de-commissioned.		
608	The Transition Plan shall, at a minimum, include the installation, Commissioning, Revenue Collection and acceptance of Cashless Tolling In-lane Equipment, the transition (where applicable) from cash collection to cashless tolling operations, and Acceptance of each implementation phase of the Project.		
609	The operational requirements, interfaces, and/or Equipment installation for the Cashless Tolling System and its interface to the PTC Toll Host system, SAP and existing CSC/VPC System shall be included.		
610	Any temporary processes implemented to support the transition shall be documented in the Transition Plan including eventual replacement process if applicable.		

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611	All points of coordination or reliance on third-party deliverable, for example the WAN communications network shall be clearly identified in the Transition Plan.		
612	The impacts to existing systems including those in the proximity of the tolling point shall be addressed in the Transition Plan.		
613	The Cashless Tolling System Transition activities shall be coordinated with the civil Contrator, civil designer and existing system integrators and Approved by the Commission in order to not interfere with on-going and continuing maintenance and operational requirements.		
614	In order to ensure a seamless transition, the following activities shall take place prior to opening the first tolling point to cashless tolling in revenue collection.		
	· Upon Approval to proceed with a Commissioning Test, the Contrator shall conduct such test at each tolling point prior to opening each location to traffic and revenue collection. Since each location may also include civil construction, the Contrator shall be responsible for interfacing and coordinating with the civil Contrators for scheduling and maintenance and protection of traffic requirements during the conversion to cashless tolling.		
	· The Cashless Toll Host servers and central image servers (if implemented) shall be installed and commissioned at the primary and secondary locations and its interface to the PTC Toll Host system and existing CSC/VPC shall be validated.		
	· The MOMS shall be configured for go-live; inventory recorded; technicians scheduled, and notifications set up;		
	· The DVAS shall be installed and validated and Authorized Commission personnel shall have access to the DVAS;		
	· The OFIT shall be conducted and Cashless Tolling System functionality and performance validated at the initial tolling point installation;		
	· An end to end test shall be conducted in the PTC Toll Host system and existing CSC/VPS system test environments, and		
	· The Commission shall confirm the existing systems are ready for Conversion and give Approval for Go-Live. At such time, the Cashless Tolling System shall be switched over to the production PTC Toll Host system and existing CSC/VPC system.		
615	The Contrator shall plan for possible variances in the sequencing of the transition due to construction and readiness of the CSC/VPC systems and operations in its Transition Plan.		
IV	**Cashless Tolling System Installation Requirements**		
	This section details the requirements for the installation of the In-lane Cashless Tolling System and the Cashless Toll Host System. Unless Approved by the Commission, no System installation shall occur prior to the satisfactory Approval of Installation Design and the Factory Acceptance Test.		
4.1	**Installation Program**		
616	The Contrator shall have an Installation Program that addresses all aspects of the installation of the In-lane Cashless Tolling Systems and the Cashless Toll Host System, including all installation Design, submissions and coordination.		
617	The Contrator is responsible for the Design, procurement, installation, cabling, configuration, check-off, and testing of all Hardware, Equipment, communications, and Software and fixtures provided by the Contrator as part of the In-lane Cashless Tolling Systems at each of the tolling points identified by the Commission.		
618	In the event the Contrator decides to re-use existing Hardware, conduits and junction boxes, the Contrator is responsible for ensuring that such elements are in their fully operational condition and will meet the requirements of the Contract for the term of the Contract.		
619	The Contrator shall install the Cashless Tolling In-lane servers and Hardware in the toll equipment building provided by the Commission through the civil Contrator.		
620	The Contrator shall install the Cashless Toll Host Systems at the primary and secondary locations.		
621	The Contrator shall work with the Commission to test the WAN and the connections to the PTC Toll Host system and the existing CSC/VPC systems. Testing shall include expected traffic loads and all types of production operation data		
622	The Contrator shall coordinate all lane closure activities with the Commission and the civil Contrator.		
623	The Contrator shall validate and approve the Commission and the civil Contrator infrastructure installation and confirm they are in compliance with the Approved civil drawings.		
624	The removal and disposal of the existing equipment not re-used by the Contrator will be responsibility of the civil Contrator and the Contrator shall support the coordination of this work.		
625	The Contrator shall install and tune the certified AVI Equipment to the AVI vendor specifications in compliance with the E-ZPass Group requirements. In addition, the AVI vendor shall certify that the lanes are tuned to the Approved AVI specifications.		
4.2	**Installation Plan**		
626	The Contrator shall develop and submit an installation plan that identifies its approach to installation and drawing package submissions and documents all installation related activities for the Project. The installation plan shall be the master document from which the elements of the System shall be installed.		
	The installation plan shall include and define, at a minimum, the following items:		

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627	· The installation schedule detailing all activities, shifts and resources for the installation of the In-lane Cashless Tolling Systems and the Cashless Toll Host Systems, including third-party and civil Contrator activities. Once the baseline schedule is Approved by the Commission, updates during the installation periods identifying all schedule changes and Work progress in the form of percentage completions shall be submitted to the Commission for Approval.		
	· The minimum resource allocation requirement for any installation phase and segment.		
	· How the Contrator manages delivery and staging of the Cashless Tolling In-Lane and Host Equipment to be installed, including any staging, installation and testing performed at the Contrator or third-party facilities and their subsequent delivery and installation at the production sites.		
	· The coordination between other Contrators, including the civil designer, civil Contrator(s), service providers, and the existing Contrators.		
	· Coordination of the lane closures with the civil Contrator(s) for each phase of the project.		
	· Coordination with the civil Contrator(s) for the installation of the toll equipment building, the generators and UPS.		
	· Coordination activities as applicable with other third-party entities for the various interfaces.		
	· Testing of the Commission provided fiber communications network for connection to existing PTC Toll Host system and the existing CSC/VPC system.		
	· Quality control, quality assurance, inspection, and testing processes including validation of Contrator installation to the requirements of the Contract installation drawings.		
	· The order in which Equipment items are to be installed with estimated durations.		
	· Special or unique installation requirements.		
	· A detailed component list and a description of how each item version number and serial number shall be recorded for each installation and configuration into the MOMS.		
	· Organization Chart defining Key Team Personnel, roles and responsibilities and contact information.		
	· Contingency Plan.		
	·		
4.3	**Installation and Construction Coordination and Meetings**		
	During the Project Design, development and installation periods there shall be a series of meetings between the Contrator, the Commission, existing Contrator, civil designer and the civil Contrator(s) to clearly define and develop the installation requirements, methodology, timetables, test plans, roles, and contingency plans. The Contrator is responsible for coordinating and scheduling all meetings necessary to complete the Design and installation phase of the Project.		
628	The Contrator shall schedule, manage and attend weekly installation meetings during the active Design and installation phases of the Project and report on progress of the installation. The Contrator shall identify and communicate any issues regarding Cashless Tolling System construction and installation immediately upon discovery to the civil Contrator(s), existing system integrator and the Commission.		
629	The Contrator shall ensure that the appropriate personnel are present at these meetings who can represent the Contrator's interest and provide the information necessary in a meaningful manner.		
630	Prior to the meeting, the Contrator shall update the installation schedule based on the construction schedule and all changes shall be identified.		
631	The Contrator shall prepare and distribute a meeting agenda at least forty-eight (48) hours prior to the scheduled meeting. The meeting agenda shall consist of those items pertaining to the installation and schedule for the previous and current week's installation efforts and for an agreed to "look ahead" period.		
632	It is the Contrator's responsibility to make sure all issues that arose during the installation activity for the week are addressed and resolved or is scheduled for resolution.		
633	At these meetings, the Contrator shall also be prepared to address any issues or questions raised by the civil designer, civil Contrator, other Contrators, and the Commission or its representative.		
634	The Contrator shall document the meeting discussions and distribute the meeting minutes to the team. The Contrator shall also record and maintain an action items list that tracks all installation related issues.		
4.3.1	**Construction Coordination with Infrastructure Contrators**		
	The Contrator shall coordinate all installation activities with the civil Contrators on new cashless tolling facilities to ensure all Cashless Tolling System Equipment specifications are addressed in the Design and installation of the cashless tolling infrastructure. Attachment 2: Cashless Tolling Installation Responsibility Matrix defines the areas of responsibility for the parties involved in the Project Design and construction for new cashless tolling facilities.		
635	The Commission (or its civil Contrator) is responsible for the construction of the overhead structures/toll gantries, installation of the toll equipment building and provision of the generators for the new tolling point, and the Contrator shall coordinate closely with the Commission, and the Commission Contrators.		
	The Contrator shall participate in the Design and installation of the cashless tolling infrastructure at the tolling points, including but not limited to:		

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636	· provide all required Design and installation drawings, operating requirements and installation specifications to the Commission and the civil Contrators for all toll system Equipment provided;		
	· support and supply all information requested by the civil Contrator and civil designer in the form of request for information (RFI);		
	· review all civil Contrator provided drawings with respect to the toll system;		
	· approve all aspects of such drawings related to the toll system, and		
	· ensure the Cashless Tolling System infrastructure needs necessary to meet the requirements set forth in this Scope of Work are met with regard to such Design.		
637	The Contrator shall be responsible for ensuring that the locations, positions, installation, connections and other elements of the Contrator inputs identified on the Design and installation drawings provided by the Contrator, for all Contrator and Commission provided Equipment, whether in-roadway, structure/toll gantry mounted, in the toll equipment building or otherwise located are accurate and correct.		
638	Contrator shall also ensure that the installed roadway; infrastructure; structures/toll gantries; toll equipment building; UPS, and generators meet the Design requirements provided by the Contrator and shall approve such installed work with regard to the Design provided.		
639	Contrator shall cooperate with the Commission and infrastructure contactors to minimize required number of lane closures and to maximize the use of other scheduled lane closures. The Contrator shall transmit all lane closure requests to the Commission for approval.		
640	Contrator shall work with the Commission and agree to a reasonable plan for scheduling and approving lane closures, including a procedure for advance notice of cancellations of lane closures and allowable conditions for such cancellations as described in this Scope of Work. The civil Contrator is responsible for administering all lane closures and traffic controls during the installation phase and for all testing through Acceptance.		
4.3.2	**Construction Coordination with Civil Contrator**		
641	The Contrator shall coordinate all installation activities with the civil Contrator. Attachment 2: Cashless Tolling Installation Responsibility Matrix defines the areas of responsibility for the parties involved in the Project Design and installation on the cashless tolling facilities.		
4.4	**Installation Requirements**		
642	The Contrator shall be responsible for procurement, installation, cabling, termination configuration, testing, and check-off of all Equipment and Software required to meet the requirements of the Contract.		
643	The Contrator shall install all appropriate In-lane System servers and Equipment required by the Cashless Tolling System in the toll equipment building provided by the Commission through a third party.		
644	Procurement, installation, configuration, and testing of all local area communications Equipment and connection to the Commission installed network equipment in the toll equipment building shall be the responsibility of the Contrator as further set forth in this Scope of Work.		
645	Procurement, installation, configuration, and testing of all appropriate Cashless Toll Host System servers, Equipment and Software required by the Cashless Toll Host System at the primary and disaster recovery locations and validating communications to its interfacing systems shall be the responsibility of the Contrator as further set forth in this Scope of Work.		
4.5	**Compliance to Standards**		
	The Contrator shall adhere to all installation standards, applicable laws, ordinances and codes as required.		
646	The Contrator shall meet all electrical codes, traffic control, seismic considerations, calibration, configuration, and environmental requirements of and including, but not limited to:		
	· Equipment manufacturer's;		
	· NEC;		
	· UL standards;		
	· PTC;		
	· PennDOT;		
	· FHWA;		
	· IEEE (Institute of Electrical and Electronics Engineers);		
	· OSHA requirements, and		
	· any local authorities having jurisdiction.		
647	The Contrator shall adhere to all specifications of the latest Commission Standard Specifications at time of construction unless the Contrator receives written notification by the Commission which overrides the Standard Specifications. Commission Standard Specifications are located at: https://ebs.paturnpike.com/generalinformation/documents		
648	The Contrator shall be responsible for all costs associated with any permits, plan reviews, and inspections related to toll system work.		
649	It shall also be the Contrator's responsibility to procure all documentation required to install and adhere to the proper installation standards, law, ordinance, or codes.		

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650	The Contrator shall procure Services of SubContrators qualified to work in this industry. If a vendor's component requires a vendor Approved installer, the Contrator shall use an Approved component installer, including qualified vendor staff.		
4.6	**In-lane System Installation Requirements**		
651	The Contrator shall supply all personnel, tools, vehicles, materials and Equipment required to perform the complete installation of the Cashless Tolling System, including but not limited to all Equipment and vehicles required for overhead installation Work on the overhead structures/toll gantries; specialty Equipment for preparation and saw-cutting of loops as required, and provide necessary test vehicles to adequately test the installed System in accordance with the Approved test plan.		
652	Where the Contrator is providing subsystem components manufactured by a third party vendor, the Contrator shall ensure that all such components are installed in accordance with manufacturer's installation guidelines. Third-party onsite services shall be obtained as applicable to install, configure and tune the first on-site installation.		
653	The Contrator shall provide onsite and remote support for such subsystem manufacturer components as necessary to ensure the proper installation and operation of its Equipment at no additional cost to the Commission. All third party Equipment and subsystems shall be certified by the manufacturer as being compliant with their installation guidelines and meeting Contract requirements.		
654	The installation responsibilities for the Cashless Tolling System shall include but not be limited to:		
	· Furnish and install uninterruptable power to all Cashless Tolling System Equipment on the overhead structures/toll gantries and in the toll equipment building. UPS and generator will be provided by the Commission.		
	· Furnish and install all connecting conduit from wire ways and conduits provided and installed by others and/or stub conduits to the Equipment. The civil Contrator(s) will install the conduits from the toll equipment building to the demarcation point on the overhead structures/toll gantries as shown in Attachment 6: Installation Demarcation Diagram.		
	· Furnish and install separate ground wires for the Cashless Tolling System, surge protection devices (SPD), junction boxes, pull boxes, conduits, and other such items as required by the installation standards and requirements. All exposed junction boxes, pull boxes and other Hardware shall be either zinc coated and epoxy painted or stainless steel;		
	· Furnish and install all wiring for all in-lane Equipment and connections to the equipment racks in the toll equipment building. This includes the proper termination of all power, communication, and RF cables and/or wiring (copper or fiber optic) required to connect the individual components into a fully operational System as specified by the manufacturer.		
	· Furnish and install all Equipment racks required for the in-lane electronics in the toll equipment building.		
	· Furnish and install all AVI readers in the toll equipment building (if applicable) or at Approved Commission location.		
	· Furnish and install all zone controller computers (Hardware and Software) into the equipment racks and test it connection to the zone controller and the facility servers (if provided)/ Cashless Toll Host Systems.		
	· Furnish and install all electronics and other devices in their respective equipment racks as required to provide a fully operational System.		
	· Furnish and install all Equipment mounting brackets to support structures for the installation of all toll system Equipment on the mounting arms on the overhead structures/toll gantries.		
	· Furnish and install the AVC system Equipment, including in-pavement sensors and overhead mounted Equipment and controllers as specified by the manufacturer. Includes all the Commission Approved materials, Equipment and supplies required for saw-cutting, wiring and sealing of wires in the roadway.		
	· Install the AVI system Equipment, including antennas, readers, related Equipment, cables, and any support brackets required. All AVI mounting Hardware, junction boxes, and cables shall be procured and supplied by the Contrator.		
	· Synchronize the new Cashless Tolling System with existing AVI system, including the provision of required cables as needed.		
	· Furnish and install the LPICPS Equipment, including cameras, LPICPS illumination, and any video controller Equipment, sensors, Software, controllers/servers, or specialty Equipment associated with the LPICPS.		
	· Furnish and install facility servers (if required) in the equipment racks, including Software and test it connection to the zone controller and the Cashless Toll Host Systems.		
	· Validate all cable and wire terminations via a test process to ensure that the cable is connected to the correct location on each end and that the cable/wire is properly terminated.		
	· Power up and provide a field check out/installation acceptance test of all systems, to be witnessed and Approved by the Commission or its designated representative. Provide the completed installation checklist as described in Section III of this Scope of Work.		
	· Tuning and testing of the AVI system, as described in, and in full accordance with, manufacturer's guidelines.		

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	· Calibration and testing of LPICPS in full accordance with manufacturer's guidelines and to meet the OCR/ALPR requirements specified in the Scope of Work (if the option to implement OCR/ALPR is exercised).		
	· Calibration and testing of AVC system in full accordance with manufacturer's guidelines.		
	· Installation, calibration and testing of the DVAS cameras and Equipment.		
	· All other items, materials, and Equipment to complete installation in accordance with the Contract.		
4.7	**Cashless Toll Host System Installation Requirements**		
655	The Contrator shall coordinate all Cashless Toll Host System installations and testing of the WAN and interfaces to the existing systems with the Commission and existing system integrator.		
656	The Contrator shall install all Cashless Toll Host Systems, including primary and secondary host servers and central image servers (if provided) at the primary and secondary locations specified in the Scope of Work and Approved by the Commission.		
657	All servers, storage devices, communications Equipment, and other Cashless Toll Host System Hardware shall be installed in the designated locations as prescribed in the drawings submitted by the Contrator and Approved by the Commission.		
658	The Contrator is responsible for the following activities, including but not limited to:		
	· furnish, install, configure and test the necessary servers in accordance with the Approved Design documents;		
	· furnish, install and test the storage units and backup devices;		
	· furnish, install and test the network Equipment at the primary and secondary Cashless Toll Host locations;		
	· validate communications to the Commission installed network equipment at the toll equipment building;		
	· establish and validate communications from the Cashless Toll Host System (host servers and image servers) to each of the tolling points at the toll equipment building;		
	· establish and validate communications from the Cashless Toll Host System (host servers and image servers) to the existing CSC/VPC system;		
	· establish and validate communications from the Cashless Toll Host System to the PTC Toll Host system and SAP;		
	· furnish, install and validate third-party Software and Contrator Software on all servers and Equipment required to support the Cashless Toll Host System;		
	· furnish, install, configure and test all servers and Equipment for correct point-to-point installation, proper connectivity, acceptable termination of all cables and successful communications linkage;		
	· Configure the Cashless Toll Host System to support interfaces as defined in the Approved ICDs and		
	· All other items, materials, Equipment and Software required to complete installation of a fully functional Cashless Toll Host System in accordance with the Contract.		
4.8	**Installation Checklist**		
659	The Contrator shall develop an installation checklist that tracks the progress and completion of all installation activities for the Cashless Tolling In-lane System installation and the primary and secondary Cashless Toll Host System facilities installation.		
660	The checklist shall be the document detailing those items required for the installation crew and technical team to complete the installation process for all Equipment and components, including terminations, connections and configurations.		
661	A copy of the checklist signed and Approved by the Contrator, attesting to the completeness of the installation, shall be provided to the Commission after the completion of the installation activities for each lane at each tolling point.		
662	The Contrator shall conduct a final inspection of all installations and certify the installation Work.		
663	The Commission reserves the right to obtain the services of the Facilities Department to witness the Contrator inspection and conduct an independent inspection. The Contrator shall coordinate and support such inspections at each facility.		
664	The checklist shall identify all discrepancies and exceptions and Contrator shall be responsible for all corrections.		
665	The checklist shall document all changes identified during the installation process and all such changes shall be Approved by the Commission or its designated representative.		
4.9	**Electrical Work**		
666	Electrical Work to be performed under this Contract shall include, but not be limited to the following general items of Work:		
	· Provide and install surge protection devices as required to protect the Cashless Tolling System Equipment and electronics.		
	· Install junction boxes and terminate new cable and conduit attachment devices, where applicable.		
	· Bond all conduits, manhole frames, metallic junction boxes, and other conductive items to the grounding system in conformance with the Commission and PennDOT Standard Specifications, the NEC and other authorities that have jurisdiction.		

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667	All electrical Work shall be performed in accordance with the applicable regulations and Approved by the Commission and other authorities having jurisdiction. Appropriate NEC compliance shall be adhered to with all electrical articles for installation pertaining to wiring, enclosures, and other electrical Equipment in hazardous locations. UL labels shall be provided for all electrical panel boards, enclosures, and accessories.		
668	All electrical Equipment must be inspected prior to installation for defects that could damage the Equipment or harm personnel. Any Equipment found to have defects shall not be installed but shall instead be replaced with a fully functioning replacement.		
669	All electrical Equipment shall be properly grounded for safety. Equipment shall be furnished with grounding pads or grounding lugs. All ground connections shall be cleaned immediately prior to connection.		
670	The Contrator shall provide all grounding material required for installation and all installations shall be in compliance with the applicable standards.		
4.10	**Lane Closure and Traffic Control Requirements and Conditions**		
671	The Commission will provide all MPT activities associated with completing Contrator Work during the Implementation Phase. All lane closures shall be coordinated with the civil Contrator and lane closure schedules shall be submitted to the Commission is advance for Approval. Lane closure schedules and lane closure requirements can be found on the Commission website at https://www.paturnpike.com/business/engineering_standards.aspx		
672	In-lane Cashless Tolling Equipment installation shall be scheduled to minimize traffic delay during the installation process. The Contrator shall make every effort to schedule Work around peak traffic movement times. All lane closures shall be coordinated with the Traffic Operations Center.		
673	In the event that extended lane closures (lane closure exceeding 2 hours) are required, the lane closures shall be completed between the hours of 11:00 P.M. EST and 6:00 A.M. EST, excluding Holiday periods as set forth in the lane closure requirements.		
674	Lane closures scheduled for less than 2 hours shall be Approved by the Commission in accordance with the documentations provided on the website, and shall not occur during peak traffic times, and shall be solely at the Commission's discretion for Approval and continuance in cases where the lane closure is underway.		
675	The Contrator shall follow the requirements as stipulated in the latest applicable Commission's Maintenance and Protection of Traffic Standards: www.paturnpike.com/business/engineering_standards.aspx.		
676	Any Work involving removal/relocation of Equipment (loosening or removal of nuts/screws, cables, connectors etc.) shall be done with appropriate lane closures during nighttime period or off peak hours as listed within this section.		
677	Activities that require no removal/relocation of Equipment (for example, testing/monitoring functions) shall require no lane closures (Work shall be completed from the structure/walkway above live traffic). Activities shall be limited only to adjusting or shifting tethered toll Equipment in place without removal of Equipment, mounting devices, etc.		
678	All Equipment and tools shall be tethered at all times when working above open/live traffic.		
4.11	**Contingency Plan**		
679	A detailed contingency plan shall be prepared for reopening closures to public traffic. A general contingency plan shall be included in the Installation Plan; however, a site specific contingency plan shall be submitted to the Commission before Work at the job site begins.		
4.12	**Work Standards and Requirements**		
680	The Cashless Tolling System Equipment installation shall be performed to an Approved set of plans, which has previously been submitted and Approved by the Commission or their designated representative.		
681	The Contrator shall provide Project management and oversight of all Work performed. At all times when installation Work is taking place, the Contrator shall have an individual designated in the Organization Chart as Site Manager onsite to supervise the installation.		
682	The Contrator shall install the Cashless Tolling System Equipment to the highest standards, using experienced and knowledgeable personnel. For example, journeyman electricians shall terminate all cables, wiring, or fiber optic cables.		
683	All tools such as crimpers, fiber optic termination tools, and test Equipment shall have been properly calibrated prior to being used.		
684	The Contrator shall provide a safe environment for the installation process in accordance with all applicable local, State and federal requirements, as well as any Commission policies. Examples include but are not limited to the following:		
	· safety harnesses shall be included and employed on all lifts, and the personnel trained on their use;		
	· hard hats and safety vest shall be worn in all construction areas;		
	· safety toe shoes shall be worn in construction areas and around active roadways while performing installation processes;		
	· Contrator issued identification badges shall be worn at all times, and		

Functional Requirements - Addendum #1			
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	· regular safety meetings shall be scheduled to review safety procedures.		
4.13	**Design and Documentation during Construction and Installation**		
4.13.1	**Engineering Design**		
685	The Contrator shall secure the services of a fully-qualified engineering design firm(s) for the purpose of performing all infrastructure related engineering Design (civil, structural, electrical, mechanical, and architectural) and the preparation of related plans and documentation under the Contract.		
686	All Design Work shall be performed under the direct supervision of a Licensed Engineer of the appropriate discipline in the State of Pennsylvania. All design professionals shall be licensed and authorized to practice in the State of Pennsylvania.		
687	If the Engineering Design effort is performed by the Contrator, the Contrator shall submit documentation showing that the Contrator has met the required qualifications described in this section.		
4.13.2	**Document Control**		
688	The Contrator shall maintain a Configuration Management System to control all Project-related documents and drawings. Each document shall be properly titled, date updated, numbered by revision and version and shall incorporate signature blocks for authorship and approvals. Only the latest Approved drawing version may be used for installation.		
689	All documentation regarding the lane Equipment and Cashless Toll Host System Equipment installation shall be maintained by the Contrator. All drawings and other such documentation shall be made accessible to the Commission for review.		
690	The Contrator shall maintain all non-conformance reports (NCR) submitted by the inspectors and document the correction and resolution of all issues identified.		
4.13.3	**Installation Design and Drawings**		
691	The Cashless Tolling System Equipment shall be installed on existing infrastructure or overhead structures/toll gantries that will be designed and constructed by others separately procured by the Commission.		
692	The Contrator shall provide the installation requirements including acceptable tolerances for the Cashless Tolling System Equipment, including all related plans and documents. The civil designer and civil Contrators shall rely on the installation requirements provided by the Contrator to design and construct the overhead structures/toll gantries for the Cashless Tolling System Equipment to function as intended, and Contactor shall be fully responsible for the accuracy of its installation requirements.		
693	The installation requirements provided by Contrator shall be consistent with those provided in Contrator's Proposal and shall accommodate the selected design from the samples provided in Attachment 5: Concept Plan for Overhead Structures/Toll Gantries.		
694	The Contrator shall certify the installation requirements provided as accurate and appropriate for its intended purpose to the satisfaction and Approval of the Commission.		
695	Contrator shall indemnify all related parties as more fully described in the Terms and Conditions for any damages that result from reliance on the installation requirements provided by Contrator.		
696	The Contrator shall submit shop drawings detailing the installation Design that shall be used onsite for installation Work. Detailed drawings shall be provided for each site where Equipment procured and supplied under the Contact shall be installed.		
697	The Contrator shall submit the following Design drawings as part of the drawing package in accordance with the Commission submission requirements, including but not limited to:.		
	· detailed installation drawing for each piece of Equipment;		
	· detailed drawing showing the equipment mounting brackets and details of their installation to the mounting arm;		
	· details related to the range of Equipment adjustments;		
	· detailed electrical schematics;		
	· all junction boxes and panels;		
	· detailed equipment rack layout and interconnections drawings;		
	· detailed communications layout;		
	· power and communications cabling schedules, and		
	· pavement installation details for in-pavement sensor installations.		
698	During installation the Contactor shall maintain a red line version of the drawing package that is submitted to the Commission upon the completion of the installation.		
699	Documentation shall include memos denoting changes or modification to requirements.		
700	The Contrator shall submit detailed component level network drawings showing all WAN, LAN and VLAN connections, including connection to the PTC Toll Host system, SAP and the existing CSC/VPC system.		
701	Contrator shall utilize a predefined range of IP addresses provided by the Commission. An IP schematic shall be submitted and Approved by Commission IT Security that shows all the IP addresses for all Contrator supplied Equipment on the network.		

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702	The Contrator shall submit detailed component level primary and secondary server configuration instructions, including storage device mirroring, backup devices and configuration, and network configuration and testing.		
703	The Contrator shall submit detailed instructions on the installation of the operating system, database, third-party Software, and application Software on the servers.		
704	All testing required to verify successful installation and operation shall also be documented.		
4.13.4	**As-Built Drawings/Documents**		
705	The Contrator shall update the latest drawings with red-lines as changes are incorporated during the installation process. At the completion of the installation of the Cashless Tolling System, the Contrator shall gather all red line drawings.		
706	The red line drawings shall be verified and then incorporated into a final As-Built drawing package. This final As-Built package shall include installation drawings, shop drawings and sketches, and other drawing types that may have been used to install the Cashless Tolling System. The As-Built drawings shall include at a minimum power and data connections, installed equipment locations and electronic cabinet/panel layouts.		
707	All other documentation used regarding the installation shall be also be finalized and submitted as part of the As-Built submittal.		
V	**Cashless Tolling SYSTEM PROJECT REQUIREMENTS**		
5.1	**Cashless Tolling System Project Management**		
	The Contrator shall employ a Project Management System that is sufficiently detailed to enable the Commission to review and confirm that the Contrator has the necessary management, staff, and controls in place to meet the requirements of the Contract.		
5.1.1	**Program Management Plan**		
	The Program Management Plan describes how the Contrator plans to implement and manage the Project, including staffing, scheduling and communication procedures for controlling all correspondence, submittals, and other communications between the Contrator and the Commission, and communications with the civil designer, civil Contrators, third-party entities and existing Contrators.		
708	The Program Management Plan shall at a minimum include the following elements:		
	· Project scope and key Deliverables;		
	· a description of the management and organization of the program, including an organization chart, identification of Key Team Personnel, their responsibilities and percentage commitment to the Project, tasks leads for each functional area and location and identification of the resources to be used in fulfilling the requirements of the Contract;		
	· Project team (Contrator, the Commission, Commission's Representatives and existing Contrators) contact information;		
	· a description of the Project planning, documentation and reporting methods to be utilized, both for use within the Contrator's staff and externally to the Commission and other entities;		
	· a description of the process for communication, escalation and resolution of Project issues with the Commission;		
	· meeting schedules for meetings with the Commission and other entities including the form of the meeting as part of the Communication Plan;		
	· the Approved Project schedule;		
	· a description of the process for reporting, updating and tracking the Project schedule and Project performance;		
	· coordination process with the civil designers, civil Contrators and management of the RFI process during the infrastructure design phase;		
	· coordination process with the civil designers, civil Contrators and management of the installation drawing review process;		
	· approach to change management, consistent with Contract requirements, including a description of the process for documenting and submitting change requests, the Approval process and how the change management approach will be integrated into day-to-day Project management;		
	· approach to document control, including Software (the Commission shall have the capability to download documents using this Software) and tools the Commission will use and have read-only access to via the Web;		
	· approach to risk management;		
	· approach to Quality Assurance and Quality Control;		
	· documenting the invoice submission, invoice backup information, verification, and Approval process;		
	· a section with all Approved Project forms including but not limited to, meeting agenda; meeting notes; action items tracking log; monthly progress report, and invoices.		
	· an emergency contact list as described further below in requirement #720.		
709	The Contrator shall identify the tools and products used to manage the Project and the internal controls instituted by the Contrator to guarantee successful delivery of the Project.		
710	The Contrator shall develop and submit the Project Management Plan to the Commission for review and Approval.		

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711	The Contrator shall develop and submit a Communications Plan to the Commission for review and Approval that addresses the following, including but not limited to:		
	· all correspondence shall identify the originator and designated receiver.		
	· Tracking of document versions and changes.		
	· All invoices shall be submitted with accompanying backup information as required by the Contract and consistent with the Commission processes and invoicing and auditing policies. The Contrator shall work with the Commission to develop the appropriate invoice and back-up materials as a part of the PMP development.		
	· All submittals shall be delivered as an enclosure to the Contrator's submittal letter. Each submittal letter shall be limited to a single subject or item. The Contrator's letter shall identify the Contract number, Contract name and subject of the submittal.		
	· All items of correspondence, invoices, submittals and documentation shall contain the Contract number and the designated Contract name.		
	· Process for validating that all comments provided by the Commission on Contrator deliverables are successfully addressed.		
5.1.2	**Contrator's Project Management Office**		
712	The Contrator shall establish a Project management office in the Harrisburg metropolitan area. All Project management activities shall be conducted from this office.		
713	The Project manager shall be assigned to the Project management office and shall be one hundred percent (100) percent dedicated to the Cashless Tolling Project for the Implementation Phase of the Contract.		
5.1.3	**Staffing and Key Personnel**		
714	The Contrator is responsible for maintaining and assigning a sufficient number of competent and qualified professionals who speak fluent English to meet the requirements of the Contract.		
715	The Contrator shall ensure Key Personnel are readily accessible to the Commission or their authorized representatives during the Contrator's performance of this Contract.		
716	Contrator is required to provide staff at all times sufficient to meet the Project Requirements and Contract. The following are designated as Key Personnel for this Project and are subject to the Approval, replacement and removal requirements of the Commission for Key Personnel as set forth in the Contract:		
	· Project Principal – responsible for the overall conduct and performance of the Project, oversight of the Project, the performance of the Project manager and the Commission's single point of contact for any escalated Project issues that cannot be resolved by the Project manager;		
	· Project Manager – responsible for all day-to-day Work, the overall execution and delivery of the Project and the day-to-day Contrator contact person on the Project;		
	· Deputy Project Manager – assists the Project manager in the execution and delivery of the Project and the day-to-day operations;		
	· Technical Manager, Lane Systems – responsible for management of all In-lane Systems technology resources including selection of the lane solutions, subsystems, Software development and Systems maintenance.		
	· Technology Manager, Host Systems – responsible for management of all technology resources related to the Host Systems, including Software development, on-going Hardware/Software maintenance, Equipment and Systems and information security as required to satisfy the Requirements of the Contract;		
	· Installation Manager – responsible for the installation and Commissioning of the Cashless Tolling System;		
	· Quality Assurance Manager – responsible for consistent quality throughout the Design, Development, Testing and Implementation of the Cashless Tolling System through good Quality Assurance and Quality Control practices, and		
	· Test Manager – responsible for the overall planning and implementation of the Cashless Tolling System testing program.		
5.1.4	**Cooperation with Other Contrators and Providers**		
717	The Contrator shall cooperate to the fullest extent with the civil designers, civil Contrators, the Commission and existing Contrators to ensure the Cashless Tolling System Implementation and Maintenance Phase do not conflict with or cause any interruption in capability, service or safety issues to the traveling public or customers, or impede the Commission's ability to collect tolls.		
718	The Contrator shall cooperate with the civil designers, civil Contrators, existing Contrators and external parties, as directed by the Commission, to support any activity related to the implementation of cashless tolling, including but not limited to:		
	· the Commission employees;		
	· the Commission designated representatives;		
	· other third parties, as directed by the Commission;		
	· law enforcement;		
	· inspectors;		
	· Auditors, and		

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	· all Contrators.		
719	The Contrator shall cooperate with and immediately notify the Commission of any customer complaints and system issues identified in the Commission lanes that come to Contrator's attention during the course of Implementation, Testing or Maintenance Phases.		
720	The Contrator shall provide and maintain a current emergency contact list for the Commission's use at all times for handling emergencies and escalations. The emergency contact list shall name primary and secondary (multiple secondary contacts as applicable) points of contact for each anticipated emergency type. The emergency contact list shall name the Contrator's preferred points of contact, in order of precedence and shall include, at a minimum, the Contrator's primary Project manager, deputy Project manager, installation manager, technology manager, and other support staff. The purpose of the emergency contact list is to ensure the Contrator can be reached outside normal working hours to address urgent matters.		
5.1.5	**Monthly Report and Progress Meeting During the Implementation Phase**		
	Monthly Project reports and progress meetings will enable the Commission and the Contrator to monitor the status, progress, and quality of the Work performed on the Project and to take proactive steps to ensure successful delivery of the Project.		
721	The Contrator shall provide and maintain a schedule for monthly progress meetings (in addition to the weekly Design/installation meetings during the active Design/installation periods) at a location designated by the Commission. The meeting shall be scheduled no later than the 20th day of the following month.		
722	No less than five (5) Business Days prior to the meeting, the Contrator shall submit a draft monthly progress report to the Commission for the period covering the previous reporting period. The Commission shall review and comment on the progress report prior to the meeting.		
723	The Contrator shall obtain updated installation status prior to the monthly meeting and include such updates in the Project Implementation schedule which shall be submitted with the monthly progress report.		
724	The format of the monthly progress report shall be agreed upon as one of the initial Project tasks upon notice to proceed (NTP) and shall be incorporated by the Contrator into the Program Management Plan.		
725	The monthly progress report that includes but is not limited to:		
	· a summary outlining progress and status, and percentage of Work performed for each task as compared to planned activities in the Project Implementation schedule. Comments shall be included where appropriate. The summary shall also identify key milestones met and missed in the period;		
	· an analysis of all critical path tasks, potential risks associated with the tasks and proposed contingency/work around plans to circumvent or mitigate delays to the Project;		
	· identification of any Approved changes to Approved milestone dates and Approved Project Implementation schedule, clearly noting the details and identifying the Contract amendment;		
	· a discussion of schedule compliance and an updated Project Implementation schedule showing current status against the baseline Approved Project Implementation schedule. Past due tasks shall be updated and actual dates shall be recorded for completed tasks;		
	· an updated action items list that tracks the status of all outstanding action items, activities and issues that need decision/resolution;		
	· an updated deliverables list showing submission dates, current version, current review status, responsible party and due date;		
	· a payment request, if applicable. Payment requests must identify the payment milestone, number and dollar amount. Payments requests shall be made for completed and Approved milestone payments only;		
	· a list of change requests (Contrator and Commission initiated) and their status;		
	· the previous monthly final meeting minutes, and		
	· a six (6) week look-ahead schedule.		
726	No more than five (5) Business Days after the meeting, the Contrator shall submit the final monthly progress report and draft meeting minutes for the Commission's review and Approval.		
5.1.6	**Project Meetings**		
727	In addition to the monthly progress meeting, weekly or bi-weekly Project status meetings, as applicable and Approved by the Commission, and other regularly scheduled installation and ad-hoc Project meetings shall be required during the course of the Project to address specific deliverables, Work items, Maintenance procedures and issues as they arise.		
728	The Contrator shall perform the following tasks related to all meetings, including but not limited to:		
	· develop and coordinate the Project meeting schedule;		
	· distribute notices of Project meetings in accordance with document control Requirements;		
	· prepare the agenda in coordination with the Commission;		
	· attend the meeting with all required staff in attendance;		
	· prepare minutes of the meeting and forward them to the Commission within five (5) Business Days after the day of the meeting and		

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	· maintain an action item list for each type of meeting, identifying issues that need to be resolved at the Project level.		
5.1.7	**Project Schedule**		
	The Project schedule is a comprehensive list of Project milestones, activities and Deliverables, with intended start and finish dates, including a detailed Work Breakdown Structure (WBS) that identifies Project tasks down to the Work package level and the activities required to complete the Work package Deliverables.		
729	The Contrator shall provide and maintain a detailed Project Implementation schedule for the Project in Microsoft Project format (Project 2010 or above) that lists all Project activities and tasks for all Phases of the Project, including but not limited to:		
	· Requirements;		
	· Design;		
	· development;		
	· testing;		
	· installation;		
	· Transition, and		
	· deployment of the Cashless Tolling System at the various facilities.		
730	The Project Implementation schedule shall include coordination with civil Contrator, existing Contrators and the Commission and shall clearly document all interfacing tasks.		
731	The Project Implementation schedule shall identify all milestones and tasks, starting with the NTP through the date of Acceptance and end of Warranty for each implementation location of the Project.		
732	The Project Implementation schedule shall be resource loaded, and shall include all draft submissions and review cycles, and all tasks required of the Commission and other Contrators with critical tasks.		
733	The Project Implementation schedule shall identify all critical path tasks and shall be used to manage the Project.		
734	The Project Implementation schedule shall include all tasks for the submission and approval of the final civil drawings identifying the locations of all toll equipment to be install in a toll zone within 60 days of NTP.		
735	The Project Implementation schedule shall identify the anticipated Go-Live date of February 24, 2018 for the conversion of the Findlay Connector and the 4th quarter of 2019 for the newly constructed Southern Beltway.		
736	The baseline for the Project Implementation schedule shall be submitted to the Commission for Approval within fifteen (15) Business Days after NTP.		
737	The Contrator shall update the Project Implementation schedule on a monthly basis, as identified in the Requirements for the Monthly progress report.		
738	The Contrator shall use the Project Implementation schedule as the basis for all subsequent schedules and updates throughout the duration of the Project.		
739	The Contrator shall obtain Approval from the Commission for any and all changes to the baseline Project Implementation schedule and associated milestones in accordance with the Contract process for changes and amendments and are not considered Approved unless an amendment is executed through the Contract.		
5.2	**End of Contract Transition**		
	The Contrator acknowledges that the Services it provides under the terms of the Contract are vital to the successful operation of the System and that said Services shall be continued without interruption. Upon termination of the Contract, a successor (the Commission or a new service provider) may be responsible for providing these Services. The Contrator agrees to exercise its best efforts and cooperation to affect an orderly and efficient transition to a successor.		
740	Upon the Commission's written notice, the Contrator shall furnish transition Services during the last ninety (90) days of the term of the Contract. The Contrator shall develop with the successor Contrator or the Commission staff, a Contract Transition Plan describing the nature and extent of transition Services required.		
741	The Contract Transition Plan and dates for transferring responsibilities for each division of Work shall be submitted within thirty (30) days of such notice. Upon completion of the Commission review, both parties will meet and resolve any additional requirements/differences.		
742	The Contrator shall provide sufficient experienced lane and Software support personnel in each division of Work during the entire transition period to ensure that the quality of Services are maintained at the levels required by this Contract.		
743	The Contrator shall provide sufficient staff to help the successor maintain the continuity and consistency of the Services required by the Contract. The Contrator shall allow the successor to conduct onsite interviews with the employees.		
744	The Contrator shall provide the necessary Software and Systems support Services to assist the successor operator in setting up the systems, transfer of appropriate licenses and third-party Software, and transition of all host data required to sustain uninterrupted service.		
5.3	**Software Design and Development Requirements**		

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	The Commission expects the Contrator to propose a baseline product for the lane solution and the Cashless Toll Host System, and that some custom development will be required. To ensure the Design Requirements for the Cashless Tolling System are fully understood by the Commission and the Contrator, a series of Requirements and Design review steps are specified following a sequential Design process or waterfall model. The Contrator shall work with the Commission and its representatives to produce a Conformed Scope of Work and Requirements Document (CSWRD). The CSWRD shall be the basis for the Contrator to produce a Requirements Traceability Matrix (RTM). The RTM allows for verification that the Requirements are addressed in the Design and documented in the System Detailed Design Document (SDDD) and traced to test procedures that validate the developed Cashless Tolling System meets the Contract Requirements. The RTM shall be the basis for all Design, development and testing efforts and documentation to be developed by the Contrator.		
745	The Contractor shall establish and maintain an effective Software Design and development program along with a documented Software Development Life Cycle (SDLC) to ensure compliance with the Requirements of the Contract.		
746	The Contrator shall employ effective techniques and methodologies to develop the System Requirements and Business Rules for the Project.		
747	Prior to conducting any workshops, requirements reviews, focus group meetings and Design reviews, the Contrator shall develop the necessary documentation for the Commission review and submit such documentation ten (10) working days prior to such meetings.		
748	The Contrator shall provide a Table of Contents for the Design document that identifies the required document Deliverables and any document templates that will be used to develop the documentation. Such documentation shall be tailored for the Project, and the CSWRD shall be used for developing such documentation.		
5.3.1	**System Requirements Review (SRR)**		
	The Contrator shall conduct a series of System Requirements Review meetings with the Commission to outline how the Contract requirements will be met. The outcome of these meetings shall be a Requirements Traceability Matrix (RTM) that will be used to validate each Requirement against a Design item(s), Design Documentation and testing procedure(s).		
749	The Contrator shall conduct a series of System requirements reviews with user groups to identify user needs.		
750	The Contrator shall present lane logic and transaction framing rules of the baseline solution.		
751	Contrator's existing screens and presentation formats shall be used to solicit user requirements and feedback.		
752	During the System requirements review phase the Contrator can also present the Contrator's standard product to the Commission, and use the feedback obtained in the presentation in the development of the System Requirements Document.		
5.3.2	**Business Rules Development**		
753	The Contrator shall conduct Business Rules development workshops with the Commission to develop and document the Business Rules and operational policies for the In-lane Cashless Tolling Systems and the Cashless Toll Host System.		
754	The Business Rules workshops can occur concurrent to the System requirements reviews.		
755	The Contrator shall provide Business Rules utilized at other cashless tolling facilities; however, they shall be tailored to meet the Commission's requirements and shall comply with the Scope of Work.		
756	The Contrator shall track the design, development and testing of the Business Rules through the RTM.		
5.3.3	**System Detailed Design Review**		
	Based on the RTM and Business Rules documents, the Contrator will Design the Cashless Tolling System and submit a preliminary Design document for the Commission to review and provide comments. The Contrator will then conduct a series of Design meetings with the Commission to address the comments and to create the System Detailed Design Document (SDDD), defining how the System Design will meet the Contract Requirements. Upon the submittal of an updated SDDD another review cycle will take place.		
757	The Business Rules document and the RTM shall be used to develop the System Design and the SDDD.		
758	The Contrator shall schedule Design meetings with the Commission to fully understand the Design Requirements.		
759	The Contrator shall support a phased Design process to support the multi-year implementation of the Cashless Tolling System on the Commission facilities. The Design process shall accommodate for the changes in technology that is inevitable given the duration of the Project.		
760	The Contrator shall demonstrate pre-production working products (such as, beta versions) during the Design review process, and stakeholders shall be walked through the workflow, utilizing screens and data flow diagrams.		
761	The Contrator shall explain how the System Design meets the RTM, the Business Rules and the Contract requirements.		
762	The Contrator shall conduct as many meetings and submission review cycles as deemed necessary by the Commission to address all Design issues to the Commission's satisfaction.		
5.3.4	**Reports Design Workshops**		

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	The Contrator will conduct a series of workshops with the Commission to facilitate the Design of the Cashless Tolling System reports. The existing reports are provided in Attachment 9: Existing PTC Host Reports and these shall be used as a basis for the workshops along with the applicable Contract requirements.		
763	The Contrator shall employ an effective and productive methodology for Designing and finalizing the reports for the Project.		
764	The reports Design process shall be iterative and the Contrator shall conduct multiple workshops with the Commission's stakeholders, and Contrator shall bring subject matter experts to the meeting.		
765	Subject matter experts must provide a means for explaining each report, its intended purpose, columns, fields and components and its connection with other reconciling and validating reports.		
766	Report templates from existing operational systems shall be submitted and changes to meet the PTC Cashless Tolling System requirements shall be noted. Sample reports shall have correct and accurate data and shall reconcile across other reports.		
767	Upon receiving feedback from the stakeholder, the Contrator shall develop/modify the reports and resubmit the updated reports for review.		
768	The modified and new reports shall be demonstrated to the Commission using accurate and reconciled data. Reports that are expected to reconcile to one another shall be demonstrated together.		
769	The iterative series of workshops and demonstrations shall continue until baseline reports are Approved by the Commission.		
770	The Approved baseline reports shall be used as the basis for the Design document.		
5.3.5	**Software Walkthrough**		
	The intent of the Software walkthrough is to provide an overall status on the Contrator's Software development progress to ensure the Contrator is on track to deliver the Project on schedule and to obtain the Commission's feedback on the direction of the development prior to the full rollout of the Software.		
771	The Contrator shall conduct a series of Software walkthroughs including product demonstrations to solicit input from the Commission during the development of the Cashless Tolling System.		
772	Prior to the Software walkthrough, the Contrator shall develop and submit the use cases that will be demonstrated to the Commission for review and Approval. The walkthrough shall follow the process flow and emulate normal operations.		
773	The product shall be demonstrated in a test environment that allows data to flow as it will in the final integrated System.		
774	The Software walkthrough shall demonstrate to the Commission that the developed Software product meets the technical and functional Requirements of the Contract.		
775	Comments and feedback provided during the Software walkthrough shall be documented and resolved by the Contrator and the resolution shall be Approved by the Commission.		
776	The Contrator shall be responsible for identifying and correcting any Software issues or defects in its Design or product that impact the Contrator's ability to deliver the Cashless Tolling System that meets the Contract requirements. This shall apply to issues or defects found during or after Software walkthrough or in the subsequent testing and Implementation. Any such changes shall be Approved by the Commission in writing.		
5.4	**Documentation**		
	The Contrator is required to provide various Hardware; Software; Requirements; Business Rules; Design; testing; installation, and Maintenance documentation that include Contrator-developed documentation and third-party documentation. All documentation provided under this Contract shall meet the requirements described below.		
777	The Contrator shall provide and maintain an online, electronic document management system in a central location that is accessible to the Commission by username and password, to control all Project-related documents, submissions and drawings in accordance with the Commission ECO process as defined in Attachment 13: ETC System Change Control Procedures V1.6 (or the latest Approved version per PTC) for the term of the Contract.		
778	The electronic document management system shall be indexed and searchable.		
779	All Project documents submitted under this Contract shall be available to the Commission using the online, electronic document management system provided by the Contrator at all times.		
780	The Contrator shall maintain a deliverable tracking list that accurately tracks all Contrator submissions; the Commission's comments review documents; resubmissions and final Approval.		
781	Each document shall be properly titled, date updated, numbered by revision and version, and shall incorporate signature blocks for authorship and Approvals. The Contrator shall provide a logical indexing system for ease of access for the Commission to locate documents in the electronic document management system.		
782	Updated submissions of the document shall also include the red-lined version showing all revisions to the document since the last submission.		
783	The Contrator shall utilize acceptable standards agreed upon by the Contrator and the Commission when updating documents and submitting revisions.		

Functional Requirements - Addendum #1			
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784	All documentation submitted by the Contrator under this Contract shall be accurate and comply with Contract requirements. All deliverables shall be submitted in accordance with the Approved Project schedule.		
785	A Table of Contents, for all documentation that requires one, shall be submitted by the Contrator to the Commission for review and comment prior to the submission of the preliminary draft.		
786	The Contrator shall submit a minimum of: a preliminary draft, a final draft and a one hundred (100) percent final to the Commission for review and comment. All final documents shall incorporate all the Commission's review comments to the Commission's satisfaction. Each subsequent submission of a deliverable shall also include the Commission's comments review log with the resolution of each comment updated by the Contrator.		
787	The Commission shall have the right to require additional interim drafts from the Contrator at no additional cost should the draft documentation submitted not be of adequate quality, have missing or incorrect information or if it does not satisfactorily address the Commission's review comments.		
788	The Commission shall review and Approve all documents submitted under the Contract. For documents containing less than one hundred (100) pages, the Commission will review and provide comment on preliminary draft documents within ten (10) Business Days. For documents containing more than one hundred (100) pages, the Commission will review and provide comment on preliminary draft documents within fifteen (15) Business Days. The Commission will review and provide comment on all final draft and final documents within ten (10) Business Days. When multiple documents are submitted to the Commission simultaneously, or within one week of each other, the number of Business Days required for review shall be adjusted to reflect the overlapping submissions.		
789	The Commission will provide the Contrator with written comments on all submitted documents, and the Contrator shall respond in writing to all comments. A meeting may be conducted to clarify and resolve any remaining questions and issues concerning the comments and responses provided. The Contrator shall prepare a revised version of the document for Approval by the Commission.		
790	The Contrator shall submit the electronic version of all Contrator developed documentation for the Commission review and Approval. Acceptable electronic formats are Microsoft Office 2010 Suite (or higher), unsecured Portable Document Format (PDF) and professional CAD applications for Contrator-prepared documentation.		
791	The Contrator shall update documentation as changes occur through the Implementation Phase (and the Maintenance Phase) and shall maintain a document submittals list on the electronic document management site identifying all versions of documents, the date submitted, the nature of changes and provide relevant updates to the Commission as they are published.		
792	The documentation package for all submittals as applicable shall include all required electronic media to install, operate and maintain the System/Deliverable/document being supplied.		
5.4.1	**Requirements Traceability Matrix (RTM)**		
793	Upon completion of the Requirements and Business Rules review process the Contrator shall deliver a Requirements Traceability Matrix (RTM) that details all the technical and functional Requirements for the Cashless Tolling System.		
794	The RTM shall build on the specifications documented in the CSWRD and shall capture all user needs identified during the Requirements Business Rules review process.		
795	Upon Approval of the RTM, this document shall be the basis for functional verification Design, development and testing.		
796	During the Design and development of the Software, the Contrator shall update the RTM to reflect any changes to the Requirements that have been Approved by the Commission.		
797	During Design and testing, the RTM shall be used to verify the System compliance to the Contract requirements and test procedures.		
798	All changes to the System requirements during the course of the Project shall be tracked through the RTM.		
799	The RTM shall include:		
	· listing and categorization of all functional requirements;		
	· listing and categorization of all Software related technical requirements;		
	· identification of the source of all requirements;		
	· identification of the Design section of the SDDD that addresses the Requirement and		
	· identification of the test procedure that addresses the Requirement.		
5.4.2	**Business Rules Document**		
	As an outcome of the Business Rules workshops and review meetings, the Contrator will provide a Business Rules Document.		
800	The Contrator shall submit a Business Rules Document that includes but is not limited to:		
	· detailed Business Rules for all aspects of the System, including policies and processes developed by the Contrator and Approved by the Commission;		
	· detailed description of all System Configurable options, ranges and thresholds (Configurable within the System or Configurable by Authorized User) for each business rule (if applicable);		
	· categorization of all Business Rules, providing indication for the source of the business rule;		
	· cross-referencing of all Business Rules to the underlying Requirements and		

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	· System and operational impacts of each business rule.		
5.4.3	**System Detailed Design Document**		
801	The Contrator shall develop and submit a System Detailed Design Document (SDDD) that describes the Design specifications of all Hardware and Software provided as part of the Cashless Tolling System to meet the Approved Contract requirements. The SDDD shall demonstrate that the Contrator understands the functional, technical and performance requirements of the Cashless Tolling System and has the processes, Hardware and Software Design in place to provide a high-quality and reliable product that meets the requirements of the Contract.		
802	The SDDD shall be clear, well-written and organized into volumes to manage the submission and review process.		
803	The SDDD shall include the use of diagrams, figures and tables, and it shall apply to all environments, including primary and secondary production and testing environment.		
804	The SDDD shall include but not be limited to:		
	· System architecture, including overall System Design concept;		
	· in-lane Equipment layout for each zone type,		
	· lane layout electrical and logic diagrams;		
	· toll equipment building equipment rack layout and interconnections;		
	· data backup Systems Design, including sizing and processing calculations;		
	· the Requirements for all peripheral device Interfaces and control;		
	· server Design, including sizing and processing calculations;		
	· storage system Design, including sizing and processing calculations;		
	· network sizing and Design details including IP scheme and		
	· space Requirements;		
	· power Requirements;		
	· degraded mode of operations and impacts of failures on System operations;		
	· UPS sizing information detailing all Equipment on the UPS(s) and their total power Requirements including all Commission communications equipment regardless of purpose;		
	· detailed database Design, schema and entity relationship modeling, including sizing and processing calculations;		
	· high System availability Design, including Servers, storage, network, database and application;		
	· Disaster Recovery Design, including Servers, storage, network, database, data resiliency and application;		
	· Hardware dependencies and inter-dependencies;		
	· detailed infrastructure Software Design,		
	· detailed operating systems Design;		
	· detailed primary and secondary locations rack and server placement Design;		
	· detailed desktop computer Hardware configurations;		
	· detailed desktop computer Software configurations;		
	· detailed desktop peripherals configurations, including Requirements for all peripheral device Interfaces and control;		
	· all internal System Interfaces;		
	· all custom developed Software;		
	· all Software provided by the Contrator or a third party;		
	· Software dependencies and inter-dependencies;		
	· data flow diagrams, state diagrams and data queues;		
	· Module level descriptions and interaction among various Modules;		
	· detailed description to the Module and/or process level for all of the functions according to the functional Requirements of the System;		
	· lane logic and vehicle framing design and rules with illustrations;		
	· degraded mode of operations and impacts of failures on System operations;		
	· transaction audit and pre-processing;		
	· transaction processing Design, including sizing and processing calculations;		
	· detailed Interface specifications between all Software components;		
	· Design of all System Interfaces (both sides of the Interface), including electronic Interface to the PTC Toll Host system, SAP and the existing CSC/VPC system.		
	· formal and standard Interface Control Documents for documenting both sides of the Interface for all interfaces;		
	· detailed data management Design and processes, including summarization, archiving and purging;		
	· all user Interfaces (including reports and screen formats);		
	· System data dictionaries;		
	· application performance monitoring Design;		
	· access/identity security methodology;		
	· security access system layout and interconnections;		

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	· cabinet interconnection diagrams;		
	· environmental specifications;		
	· specification sheets for all Equipment;		
	· complete Bill of Materials, including Hardware, Software and support/Maintenance agreements;		
	· A logical division and an index of all contents within the SDDD.		
805	Upon the completion of the Software development, and prior to transitioning the Cashless Tolling System, the Contrator shall submit the Final Updated SDDD that includes all changes/clarifications made during the Software development and testing phases.		
5.4.4	**Cashless Tolling System Installation Design Requirements Package**		
806	The Contrator shall prepare and submit the Cashless Tolling System Installation Design Requirements and Documentation package to the Commission for review in accordance with the Approved Project Schedule.		
807	The Contrator shall secure the services of a fully qualified engineering design firm(s) for the purpose of providing electrical, mechanical, structural oversight, and documentation Approval for all installation drawings where applicable.		
808	All drawings shall be sealed, stamped, and certified by a Licensed Engineer of the appropriate discipline valid in the State of Pennsylvania where applicable.		
809	The Contrator shall develop a full size (24" by 36") set of drawings providing sufficient and accurate detail to install the System components.		
810	Sealed, stamped, and certified drawings shall be provided for each site where Equipment shall be installed.		
811	In addition, the drawing shall contain notes and other detail defining specific processes that cannot be graphically depicted. The notes shall also be used to delineate specifications, tolerances, special conditions, or any other factor required to install and integrate a fully functional System.		
812	The drawings shall include but not be limited to the following:		
	· lane geometry and dimensions of actual size and placement of all Cashless Tolling In-lane Equipment;		
	· Equipment bracket mounting detail to the mounting point, including how the mounts will be brought on the platform for Maintenance, if applicable;		
	· specifications and tolerances;		
	· conduit and cable schedule showing all conduits, cables and wires used for the Cashless Toll Zones;		
	· placement of in-road components;		
	· size and depth of loop cuts;		
	· loop tolerances (such as induction, resistance, impedance, Q factor, if applicable);		
	· any specific infrastructure limitations (for example, proximity of rebar);		
	· any specific requirement of how the loop cable is placed into the cuts;		
	· all homeruns from loops;		
	· any cable twist requirements for loop homeruns;		
	· placement of overhead sensors;		
	· details describing termination process for each termination;		
	· lightning and surge suppression system;		
	· a graphical diagram of the network connectivity and data flow;		
	· detailed interconnection diagrams for all Systems;		
	· detailed electrical schematics, and		
	· detailed communications layout.		
5.4.5	**Cashless Toll Host System Installation Design and Documentation**		
813	The Contrator shall prepare and submit the Cashless Toll Host System Installation Design and Documentation package to the Commission for review in accordance with the Approved Project Schedule.		
814	The Contrator shall develop a full size set of drawings (24'' by 36") providing sufficient and accurate detail to install the System components.		
815	The drawings shall include but not be limited to the following:		
	· detailed interconnection diagrams for all Systems;		
	· detailed electrical schematics;		
	· detailed communications layout;		
	· UPS sizing specifications;		
	· Equipment rack layout, including power panels and connection to the UPS;		
	· a detailed diagram of the network connectivity, including IP scheme;		
	· server set-up and configuration;		
	· other vToll Host System Hardware installation and connections and		
	· floor loading calculations.		

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816	The Contrator shall provide the installation Requirements for the Equipment, including all related Plans and documents. The Contrator shall certify the installation Requirements provided as accurate and appropriate for its intended purpose, to the satisfaction and Approval of the Commission.		
817	The Contrator shall submit Server room drawings that show the location of the Equipment racks for all Cashless Toll Host System Equipment at the primary facility. The layout of the Server components, storage devices and communication Equipment inside the cabinets shall be clearly presented with actual measurements shown.		
818	The Contrator shall submit Server room drawings that show the location of the Equipment racks for all Cashless Toll Host System Equipment at the Disaster Recovery facility. The layout of the Server components, storage devices and communication Equipment inside the cabinets shall be clearly presented with actual measurements shown.		
819	The Contrator shall develop and submit to the Commission a full size (24" by 36") set of drawings, providing sufficient and accurate detail to install the System components.		
820	The Contrator shall submit UPS sizing information for the primary and Disaster Recovery facilities, detailing all Equipment on the UPS and their power specifications.		
821	The Contrator shall submit detailed network drawings showing all WAN, LAN and VLAN connections, including all interface connections and IP addresses for all Equipment on the network.		
822	The Contrator shall submit detailed Server configuration instructions, including the configuration of storage devices, backup devices and network connectivity.		
5.4.6	**Quality Assurance Plan**		
823	The Quality Assurance (QA) Plan that details the Contrator's QA Program shall be submitted to the Commission for review and Approval in accordance with the Approved Project Schedule.		
824	The QA Plan shall include the Contrator's QA Program through planning, documentation; Design; Development; production; purchasing; testing; and installation of all Hardware and Software provided under this Contract.		
825	The Quality Assurance Plan shall describe the quality assurance procedures and methodology for the Project, including but not limited to:		
	· quality management and organizational structure;		
	· System Design;		
	· Software development and defect management;		
	· installation including civil installation sign-off;		
	· Equipment purchase, delivery and validation;		
	· inspection and verification for in-process, final assembly, unit tests and System testing;		
	· configuration management;		
	· change management and change control process;		
	· training and safety;		
	· quality management documentation;		
	· transition;		
	· compliance to Contract Requirements;		
	· quality review and verification and		
	· reporting and metrics.		
5.4.7	**Software Development Plan (SDP)**		
826	The Contrator shall develop and submit a Software Development Plan (SDP) that includes but is not limited to:		
	· documentation of the Software development approach to the application architecture, behavior, architecture, business processes, security and data structures;		
	· approach System Design and Development given the Cashless Tolling System Project phasing;		
	· development resources and responsibilities, such as Software developers, system engineers, security engineers, test engineers, Quality Assurance and control personnel, configuration management administrator, documentation specialists and Project management staff;		
	· describe natural segregation of development areas or teams, such as development of user Interfaces, development of reports, development of the functionality and development of Interfaces;		
	· Software development standards;		
	· security standards;		
	· Software development methodology, such as use cases, modeling and other development tools;		
	· Software development language strategy, platforms and technologies related to both development and Software Maintenance;		
	· description of the Software Development Life-Cycle and Maintenance;		
	· approach to segregation of environments (development, testing and deployment) and the number of environments;		
	· Maintenance of standard and baseline codes and management of major releases;		
	· gap analysis of baseline code to Contrator Requirements;		
	· development problem reporting, defect tracking and remediation;		

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	· code reviews and code development standards;		
	· source control;		
	· informal and internal testing methodology;		
	· regression testing and security and vulnerability testing;		
	· development and integration approach for the major functional modules;		
	· Software Quality Control processes;		
	· Software end-user documentation review and usability;		
	· development documentation;		
	· technical Software code documentation and standards for all code;		
	· Software configuration and change management approach and standards;		
	· samples of detailed Software documentation for both external and in-line documentation;		
	· Software deployment approach, release management and validation and		
	· detailed documentation of the development environment, including enough information that the environment could be completely replicated.		
5.4.8	**Master Test Plan (MTP)**		
827	The Contrator shall provide to the Commission, for review, comment and final Approval a Master Test Plan (MTP) that outlines the scope and testing concepts to be used to administrator each test identified in the Contract. The MTP shall document the methodology used to validate the Cashless Tolling System compliance to the requirements and demonstrate the Cashless Tolling System satisfies Technical, Functional and Performance Requirements.		
828	The Approved Master Test Plan shall be used as the basis for the detailed test procedures that shall be submitted to Commission for review and Approval.		
829	The Master Test Plan shall cover all aspects of the In-lane Cashless Tolling System and the Cashless Toll Host System testing from initial development through deployment, tolling point Acceptance and Project Acceptance, including but not limited to:		
	· overall approach to testing;		
	· approach to each informal and formal testing;		
	· approach to creation of data set for each test;		
	· Software test automation tools utilized for each test;		
	· approach to validating all System requirements through the testing methodology;		
	· describe the entry and exit criteria for each test;		
	· document the severity and priority descriptions and levels for each test;		
	· include a detailed schedule for each test identifying each test activity and resource;		
	· describe the methodology for testing the performance requirements and sample size for each phase of testing;		
	· describe the methodology for load testing;		
	· describe the purpose; scope; duration; System resources, and human resources for all tests;		
	· approach to validating all reporting Requirements;		
	· approach to end-to-end testing, validation and Reconciliation;		
	· approach to interface testing and compliance to standards,		
	· document how defects will be triaged; tracked; reported; resolved, and retested, including tools used to document defects, and		
	· a set of regression test procedures that will be exercised each time Software changes are made after the Approval of the FAT.		
830	The Contrator shall provide detailed test procedures for the Commission's Approval for each test outlined in the Requirements and Approved MTP, including but not limited:		
	· test logistics including test vehicles; drivers and test equipment;		
	· test scenarios;		
	· detailed test steps with expected outcomes;		
	· test entry and exit criteria;		
	· test preparation;		
	· test data creation;		
	· periodic status meetings;		
	· all necessary human resources and		
	· all necessary Hardware and Software.		
831	The Commission's Approval of any aspect of testing shall not relieve the Contrator of its responsibility to meet the full requirements of the Contract.		
832	The Contrator shall update the RTM linking every Requirement to a set of test cases to demonstrate the Requirement has been satisfied and which test satisfied the Requirement.		
5.4.9	**Maintenance Plan**		

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	The Contrator shall submit Maintenance Plans listed below that describes how the Contrator plans to facilitate the Commission in performing the Maintenance of the Cashless Tolling In-lane Systems, Cashless Toll Host System, and all Hardware at the toll equipment building in accordance with the requirements of the Contract. The Contrator shall have appropriate documentation available to all Maintenance and Software Support personnel, as required to perform their respective duties.		
5.4.9.1	**System Maintenance Plan**		
833	The System Maintenance Plan defines the approach to Services, staffing and resources to fulfill the System Maintenance requirements. The Plan shall include:		
	· organizational structure, organizational chart and job descriptions and responsibilities;		
	· detailed matrix of responsibilities (Commission and Contrator);		
	· staffing plan;		
	· approach to staffing and training;		
	· detailed System monitoring requirements;		
	· coverage and personnel locations;		
	· third party System support agreements overview;		
	· schedule of all System Maintenance activities;		
	· all System Maintenance related communication methods;		
	· Maintenance procedures, communication Protocols and approval processes for System upgrades, scheduled Maintenance activities, change management and scheduled downtime;		
	· Maintenance procedures and communications Protocols for unscheduled downtime;		
	· communication protocol for coordination with interoperable agencies and third-party entities;		
	· communication protocol for coordination with the Commission's existing Contrators;		
	· trouble reporting processes;		
	· escalation processes;		
	· spare levels and reorder thresholds, Equipment and Software warranty tracking and return material processes;		
	· monitoring the MOMS Dashboard;		
	· monitoring Maintenance performance for compliance to performance requirements;		
	· sample Maintenance reports;		
	· Equipment replacement/refresh schedule;		
	· upgrades to third-party Software and tools, and		
	· process in place to meet Maintenance performance requirements.		
5.4.9.2	**Software Maintenance and Warranty Plan**		
834	Software Maintenance and Warranty Plan shall define the approach to Services, staffing and resources to fulfill the Software Maintenance and warranty requirements including but not limited to:		
	· organizational structure, organizational chart and job descriptions and responsibilities;		
	· detailed matrix of responsibilities (Commission and Contrator);		
	· staffing plan;		
	· approach to staffing and training;		
	· approach to receiving and prioritizing Software defects (bugs);		
	· reporting, categorization, prioritization, remediation and disposition of Software defects;		
	· coverage and personnel locations;		
	· all Software Maintenance related communication methods;		
	· Maintenance procedures, communication Protocols and approval processes for Software upgrades, Software releases, testing, scheduled Maintenance activities, change management and scheduled downtime;		
	· Maintenance procedures and communications Protocols for unscheduled downtime;		
	· trouble reporting processes;		
	· escalation processes;		
	· sample Maintenance reports;		
	· Software updates and testing to comply with E-ZPass Group specification changes, and third party interface changes;		
	· Software and security updates, remediation and testing to be compliant to Commission Audit requirements, and		
	· process in place to meet Maintenance performance requirements.		
5.4.10	**Disaster Recovery Plan**		
	The Disaster Recovery Plan (DRP) shall be a comprehensive, documented statement of actions to be taken before, during and after a disaster to protect and recover the information technology data, assets and facilities of the Cashless Tolling System.		
835	The Contrator shall develop and submit a Disaster Recovery Plan (DRP) and subsequent Disaster Recovery Procedures that describe the approach, as well as activities and procedures that take place in the event of a disaster for each element of the Cashless Tolling System.		

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836	The DRP shall document the Contrator's approach to recovering from a disaster, including but not limited to:		
	· events that constitute a disaster and party responsible for declaration of a disaster;		
	· assessment of disaster risks;		
	· mitigation of disaster risks;		
	· preparations in the event of a disaster;		
	· disaster declaration and Disaster Recovery process to invoke;		
	· organization chart illustrating Disaster Recovery team members, roles and responsibilities;		
	· notification contact list, including contact information;		
	· notification protocol;		
	· sites and Equipment for Disaster Recovery, presented in a diagram format;		
	· Disaster Recovery process initiation and completion checklist;		
	· Software and data replication processes;		
	· detailed logistical processes for activation of Disaster Recovery site and systems;		
	· detailed technical processes for activation of Disaster Recovery site and systems;		
	· detailed operational functions for activation of Disaster Recovery site and		
	· detailed technical processes for reactivation of primary site (or moving to a new primary site if the original primary site is destroyed), Operations and Systems.		
837	The DRP shall be tested no less than annually.		
838	The DRP shall include a Business Continuity Plan (BCP) that details the Contrator's approach to accommodating the personnel, Equipment, Systems, network, applications and data components required to ensure the resumption and continuity of critical Cashless Tolling System processes.		
839	The BCP, based on a Business Impact Analysis to assess the needs of the Commission business areas, shall include but not be limited to:		
	· Recovery Point Objective (RPO) maximum acceptable amount of data loss for all critical Cashless Tolling System services after an unplanned data-loss incident, expressed as an amount of time;		
	· Recovery Time Objective (RTO) maximum acceptable amount of time for restoring a critical Cashless Tolling System services and regaining access to data after an unplanned disruption;		
	· Level of Service (LOS) the combination of throughput and functionality required to sustain Cashless Tolling System business Operations and		
	· detailed description of how site and System security will be maintained to ensure continued compliance with security requirements.		
5.4.11	**Training Program and Plan**		
840	The Contrator shall develop and maintain a training plan, subject to Approval by the Commission.		
841	The training plan shall describe the plan for training new personnel and shall outline the required operational/maintenance and system knowledge for each position to be gained from the training. For each position/user type, the plan shall include a training instructor guide, training manual and other materials to be used in training. The plan also shall include a schedule for follow-up training and continuing education for staff.		
842	The training plan shall provide a plan for cross-training staff from other areas of operations or management for peak period, emergency or temporary assignments to provide for staff redundancy. The training plan also shall include the training schedule for regular staff training and continuing education/training.		
843	The Contrator shall submit a training plan, in accordance with the Approved Project schedule, that describes the approach to training administrators, end users at different levels, Maintenance and support personnel, including but not limited to:		
	· overall description of the training program;		
	· training techniques;		
	· training delivery schedule;		
	· names and descriptions of each training class;		
	· purpose of each training class;		
	· who should attend the class;		
	· qualification Requirements for trainer;		
	· minimum qualifications for personnel attending the class;		
	· duration of the class;		
	· training materials, including syllabus, schedule, training goals, manuals, guides, other support materials and techniques to be used;		
	· data preparation, such as test Accounts and test transactions;		
	· required Equipment and		
	· facility Requirements.		
844	Courses shall be limited to a maximum of eight (8) hours per day.		

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845	The Contrator shall be responsible for maintaining a training database baseline and supporting data files that can be restored at the beginning of each training session.		
5.4.12	**Third Party Documentation**		
	Third-Party documentation includes standard commercial documentation for third-party provided Hardware, Software, services and materials.		
846	The Contrator shall catalogue all third-party documentation and include the catalogue with the third-party document submissions.		
847	The Contrator shall provide and maintain standard, commercially available, updated documentation for third-party provided Hardware, Software, services and materials provided under this Contract. This set of third-party documentation shall be retained at the Commission offices for the duration of this Contract and upon termination of the Contract.		
848	All updated documents shall show the revisions and also include a version of the clean document.		
849	An electronic copy of all third-party COTS Hardware and Software installation and user manuals, with updates, shall be provided to the Commission. Acceptable electronic formats are Microsoft Office 2010 Suite or higher, unsecured Portable Document Format (PDF) and professional CAD applications.		
850	Documentation shall include sufficient detail to describe the configuration of the Software as it was installed by the Contrator for the Cashless Tolling System. These should include any customization or modifications made to the Software or configurations specific to the Commission environments.		
851	The Contrator shall provide all Hardware and Software installation and user manuals for custom-developed (non-COTS) third-party products and services in a printable electronic format.		
5.4.12.1	**Third-Party Software Documentation**		
852	The Contrator shall provide third-party Software documentation, including but not limited to:		
	· all user manuals;		
	· programmer's reference manuals;		
	· warranty documentation;		
	· installation manuals;		
	· Interface documents;		
	· Maintenance manuals and		
	· any other information required to utilize the Software, such as the operating system, utilities, programming languages, application Software and communications Software.		
853	The third-party Software documentation shall be provided by the Contrator electronically in a standard and organized format, with appropriate labels, tabs and cross references to allow the Commission to easily access and reference information on each Software component on the System.		
5.4.12.2	**Third-Party Hardware Documentation**		
854	The Contrator shall provide third-party Hardware documentation, including but not limited to:		
	· all technical manuals;		
	· operator's guides;		
	· installation guides;		
	· warranty documentation;		
	· Hardware reference manuals;		
	· available options and versions;		
	· catalogs, components and		
	· illustrated parts lists.		
855	The Contrator shall provide all third-party Hardware documentation in a standard and organized format, with appropriate labels, tabs and cross references to allow the Commission to easily access and reference Hardware information on each Equipment component.		
856	Third-party Hardware documentation shall include sufficient detail to describe the configuration of the Hardware as it was installed by the Contrator for the Cashless Tolling System.		
5.5	**Manual Requirements**		
	Various manuals shall be provided as described below to allow the Commission to understand the operations of the Cashless Tolling In-lane System and Cashless Toll Host System. New manuals developed under this Contract that are not standard commercial catalogs or manuals, shall meet the Requirements set forth in this section.		
857	The Contrator shall submit the Project manuals to the Commission for review and Approval in accordance with the Approved Project Schedule.		
858	Whenever possible, all data shall be printed on 8-1/2" x 11" sheets; foldouts shall be 11" x 17".		
859	Each manual shall include, but not be limited to:		
	· a title sheet;		
	· revision history;		
	· Table of Contents;		

Functional Requirements - Addendum #1			
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	· list of illustrations (if applicable);		
	· list of reference drawings and Exhibits (if applicable) and		
	· a parts list (if applicable).		
860	All manuals shall have a consistent look and feel and shall be professionally written and presented in clear and organized fashion.		
861	All manuals prepared for the Commission under this Contract shall be produced, or editable, using Microsoft Office 2010 Suite (or higher). In addition, electronic copies of manuals shall be provided in unsecured Portable Document Format (PDF), if requested by the Commission.		
862	Any special Software required to produce scalable typefaces or other graphs shall be provided by the Contrator as part of the documentation for the manuals.		
5.5.1	**Manual Submissions and Quantities**		
863	The Contrator shall submit electronic copies of all manuals listed below.		
864	All manuals shall be maintained in electronic format in the Contrator's document management system for the term of the Contract.		
865	The Contrator shall be responsible for producing a quantity of the manuals for the Contrator's use, sufficient to fulfill the Contrator's Requirements under the Contract.		
5.5.2	**Manuals to be Submitted**		
5.5.2.1	**Cashless Tolling Lane Maintenance Manual**		
866	The Contrator shall submit Cashless Tolling Lane Maintenance Manual prepared for properly trained technical personnel assigned to the Maintenance of the Hardware and Software installed under this Contract on the Commission cashless tolling lanes. All manuals should be used for the training sessions. It shall document information required to support cashless tolling lane Maintenance and repair activities, including but not limited to:		
	· lane Equipment layout for each Cashless Tolling Zone Type;		
	· schematics and layouts of the Hardware in the lane cabinets, equipment racks and the interconnection diagrams;		
	· parts lists required to service each piece of Hardware installed under this Contract;		
	· general and detailed description and concepts of lane operations and functions;		
	· detailed lane monitoring activities, specialty tools and schedule;		
	· detailed Software monitoring activities and troubleshooting procedures;		
	· Maintenance instructions to repair and replace parts and modules;		
	· mechanical functions and installation of all Hardware;		
	· listing of all event and error logs;		
	· testing and basic troubleshooting procedures, and		
	· preventive and corrective Maintenance procedures.		
867	Standard service manuals for commercial products used for the Equipment shall be acceptable if they contain sufficient information to properly service the Equipment.		
868	Large-size logic diagrams and mechanical assembly diagrams do not have to be reduced or incorporated into the manuals if these drawings are provided with the manuals and presented in a useable and durable form.		
869	Photographic documentation of Equipment with appropriate labels and call-outs are satisfactory if they contain sufficient information to properly identify components, parts and features.		
5.5.2.2	**Cashless Tolling System Monitoring Manual**		
870	The Contrator shall submit the Cashless Tolling System Monitoring manual prepared for properly trained personnel assigned to monitoring the operations of the Cashless Tolling System including transmission of data and files to existing systems. All manuals should be used for the training sessions. It shall document information required to support Cashless Tolling System monitoring, including but not limited to:		
	· all Dashboards, monitoring screens, notifications and data that needs to be checked;		
	· listing of all jobs/process, their dependencies and their schedule;		
	· listing of all folders and directories that need to be checked;		
	· details related to the activity that needs to be checked;		
	· frequency of the validations;		
	· actions to take when results are not as expected;		
	· notification and escalation process;		
	· basic troubleshooting procedures, and		
	· creation of work orders in MOMS.		
871	Provide description about the tools and Software for personnel to record the monitoring activity and instructions to use the tools/Software.		
5.5.2.3	**Cashless Toll Host System Administrators Manual**		
	The Contrator shall provide an Cashless Toll Host System Administration Manual that serves as a guide to the overall management and administration of the Cashless Toll Host System and shall include:		

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872	· description of the programs and processes that need to be monitored to ensure that the System is operational;		
	· procedures for validating tasks, processes and jobs have successfully completed, and errors and exceptions encountered;		
	· procedures for validating the successful transfer and receipt of files for all interfaces, including PTC Toll Host system and the existing CSC/VPC system;		
	· a listing of all the error codes, their meaning and potential associated problems shall be included in the manual, with a step by step guide to troubleshooting and correcting the problem;		
	· all database Design, and database Maintenance activities required to keep the System operational shall also be clearly documented, including the scheduling of such activities;		
	· detailed procedures for backup, archiving and purging data;		
	· detailed schedule for all preventative Maintenance activities;		
	· technical contact lists for Hardware and Software providers;		
	· details and copies of all third-party system support agreements and		
	· ad-hoc reporting tools and use of the tools to generate ad-hoc reports shall be documented, and		
	· details of monitoring tools supplied by the Contrator to include but not limited to MOMS Dashboards and MOMS.		
5.5.2.4	**Cashless Toll Host System User Manual**		
	The Contrator shall develop and provide a comprehensive set of system documentation and user manuals for the Cashless Toll Host System users. At a minimum, the documentation shall include all user and training manuals, a reports definitions and data flow diagrams.		
873	The Contrator shall develop and submit Cashless Toll Host System User Manuals to be used by Commission staff to operate the Cashless Toll Host System and for training purposes.		
874	The Contrator shall develop a separate manual for each job category that details all the processes, procedures and policies developed by the Contrator and Approved by the Commission required to fulfill the Requirements of each specific job description.		
875	Each Cashless Toll Host System User Manual shall include but not be limited to:		
	· screen images detailing the step-by-step activities needed to fulfill a specific functionality;		
	· flowcharts to provide Commission staff a clear understanding of the workflow;		
	· all screens, reports and data fields, clearly explained using sample formats applicable to the Cashless Toll Host System and		
	· samples of all reports, included in the manual or as an attachment to the manual, with any specific instructions that may apply to a given report.		
5.5.3	**As-Built Documentation**		
	Prior to the Commission Acceptance of each tolling location of the Project, As-Built documentation shall be provided that documents the final Cashless Tolling System Design and implementation.		
5.5.3.1	**System Detailed Design Document**		
876	After the Approval of the Operational Test and prior to the Commission Acceptance of the Cashless Tolling System, for each tolling location of the Project, the Contrator shall submit the As-Built System Detailed Design Document (SDDD) that includes all Software and Hardware changes made during the System development, implementation, and testing phases.		
877	The Contrator shall submit an electronic version of the As-built SDDD in a printable format Approved by the Commission.		
5.5.3.2	**As-Built Drawings**		
878	The Contrator shall provide to the Commission a complete set of As-Built drawings which shall be delivered in a readily printable in full and half size formats from the electronic format Approved by the Commission for all Equipment installed and furnished under this Contract.		
879	As material changes are made to the System the Contrator will be required to update the as-built drawings to reflect the current status.		
880	The sets shall include, but not be limited to:		
	· all schematics;		
	· logic diagrams;		
	· layouts;		
	· wiring diagrams;		
	· interconnection diagrams;		
	· all attachment Hardware details;		
	· installation diagrams;		
	· cable schedule;		
	· Interface details;		
	· facility build-out details and		

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	· network diagrams, so as to provide a complete record of the as-built status of the Equipment.		
881	All drawings for revisions to standard commercial assemblies or components for the Equipment shall be included in the As-Built drawing set.		
882	All As-Built drawings shall contain a table of contents that shall include a listing of all drawings with headings for drawing number, drawing title, revisions number and date, and the type of material list, wiring diagram, wire list, specification control drawing, or similar categories.		
883	The Contrator shall update the latest drawings with red lines as changes are incorporated during the installation process. At the completion of the installation, the Contrator shall gather all red line drawings.		
884	The red line drawings shall be verified and incorporated into a final as-built drawing package. This final as-built package shall include all updated installation drawings, shop drawings and sketches, Plans and other drawing types that were used to install the Cashless Tolling System.		
885	All other documentation used regarding the installation also shall be finalized and submitted as part of the as-built submittal.		
5.6	**Quality Assurance Program**		
	The Contrator shall establish and maintain an effective Quality Assurance (QA) program on all aspects of the Cashless Tolling Project to ensure compliance with the Contract. This Quality Assurance Plan will detail the process and procedures instituted by the Contrator to ensure the QA program is in place.		
886	The Contrator shall establish and maintain an effective Quality Assurance (QA) program that ensures adequate quality throughout all areas of Cashless Tolling Project Contract performance.		
887	All supplies and services under this Contract, whether manufactured or performed within the Contrator's facilities or at any other source, shall be controlled by the Contrator at all points necessary to ensure conformance to the requirements of the Contract.		
888	Purchase, delivery, verification, testing and assembly of Equipment, Hardware and Software conducted within the Contrator's facilities and on-site shall be controlled completely by the Contrator.		
889	Delivery, verification, testing and assembly of Servers and network Equipment conducted within the Contrator's facilities shall be controlled completely by the Contrator.		
890	The QA program shall provide for the prevention and ready detection of discrepancies and for timely and positive corrective action.		
891	The QA program shall include effective Quality Control of purchased materials and Subcontracted Work.		
892	The Contrator shall make objective evidence of quality conformance readily available to the Commission, and the Commission shall have the right to review and verify the Contrator's compliance to the process.		
5.6.1	**Records**		
893	The Contrator shall maintain records or data essential to providing objective evidence of quality until the expiration of the Contract and these records shall be made available to the Commission upon request.		
894	Quality-related records and data shall include but not be limited to:		
	· inspection and test results;		
	· records of SubContrator QA programs;		
	· cost records pertinent to Acceptance of nonconforming material;		
	· inspection check-off of civil Contrators work;		
	· change request documentation;		
	· Design reviews and walkthroughs and		
	· results of internal and Contrator audits.		
895	Records shall be maintained in a manner that shall allow for access and analysis of the status of the overall QA Program and in a format as defined in Section 5.4 Documentation.		
5.6.2	**Control of Purchase**		
896	The Contrator shall be responsible for ensuring that all supplies, components, developmental tools, assemblies, subassemblies, and Services procured from SubContrators and vendors conform to the technical requirements and Contract.		
897	The Contrator shall have a quality control process in place for tracking and handling non-conforming Equipment and products.		
898	The Contrator's responsibility includes the establishment of procedures for the selection of qualified Suppliers. In selecting qualified Suppliers, the Contrator shall ensure that the SubContrators and vendors control the quality of the supplies and Services provided.		
5.6.3	**Handling, Storage and Delivery**		
899	The Contrator shall document the approach to assembly of the Equipment, including the location where Equipment and Systems are assembled.		
900	The Contrator's QA Program shall provide for adequate and documented handling, storage, preservation, packaging, and shipping instructions to protect the quality of products.		

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901	Commission assets, as defined by the Commission during the design process, shall be tracked and entered into the MOMS inventory and the cost and location of each asset shall be recorded.		
902	All assets designated by the Commission shall have an inventory tag or labeling mechanism for the electronic data entry and tracking of Commission equipment by location and cost within the MOMS, subject to Approval by PTC during the design process. The tagging or labeling mechanism shall be readily and efficiently available to Authorized staff and automatically updated in MOMS.		
903	Any unique or special requirements applicable to procured items shall be delineated in the procurement documents. All procurement documents shall be made available to the Commission upon request.		
5.6.4	**Inspection at SubContrator-Vendor Facilities**		
904	The Commission reserves the right to inspect, at the source, supplies or services not fabricated or performed within the Contrator's facility.		
905	The Commission's inspection shall not constitute acceptance, nor shall it in any way replace the Contrator's inspection activity or relieve the Contrator of the responsibility to furnish an acceptable end product.		
5.6.5	**Access to/Inspection of Contrator's Facilities**		
906	Upon request, the Commission or its designated representative shall have access to the Contrator's facilities and personnel.		
907	This access may be restricted to those portions of the facilities and personnel involved with or who are otherwise performing Work under this Contract.		
908	Such access shall be for the purpose of inspecting the facilities; verifying progress; inspection of materials; Work-in-progress; or finished goods, or verifying test performance or results.		
909	The Commission's inspection shall not constitute Acceptance or Approval, nor shall it in any way replace the Contrator's inspection activity or relieve the Contrator of the responsibility to furnish an acceptable end product.		
5.7	**Cashless Toll Host Training**		
	The Contrator shall provide comprehensive training for all aspects of the Cashless Tolling System, including but not limited to the operations, system monitoring, problem detection and resolution, audit, and Maintenance of the Cashless Tolling System. The training program will recognize and incorporate the plan for the Commission to perform Level 1 maintenance (as defined in Section VII: Maintenance and Software Services) of the Cashless Toll Host System. As such Commission technical staff will be fully trained to successfully coordinate all maintenance activities with the Contrator and to perform Level 1 Cashless Toll Host System maintenance.		
5.7.1	**Overview of Training Program**		
910	The Contrator shall be solely responsible for supplying all items necessary, including but not limited to training documentation, Software, Hardware and any other Equipment required to complete the delivery of the training program.		
911	The Contrator's program shall include but not be limited to instruction, models, manuals, diagrams and component manuals and catalogs as required.		
912	Where practical and useful, the Contrator's training shall be hands on and use actual Cashless Toll Host System Software in the training environment.		
913	The Contrator shall produce all training materials and manuals of the latest documentation in electronic form to be used and printed for future training sessions.		
914	The Contrator shall record training sessions to allow the Commission employees to remotely attend training sessions using WebEx or other online tool.		
915	The Contrator shall ensure the Commission or their representatives have the right to attend any training sessions and to make video and audio recordings of training sessions and copies of all training program materials for their use in training new employees.		
916	The Contrator shall obtain releases from all employees/SubContrators to allow unlimited, royalty free use and copies of personal identity information (PII) compliant recordings and provide the same to the Commission upon request.		
5.7.2	**Training Requirements**		
917	The Contrator shall provide the following training courses for the Commission's personnel, including but not limited to the provision of all training manuals (including Contrator- provided manuals or relevant portions thereof), guides, training aids, as well as student and instructor work books accompanying the courses listed in the sections below.		
918	The Commission may require additional courses be offered or additional personnel be provided training. The Contrator shall accommodate these requests to the extent possible with on-site personnel and documentation that is readily available.		
919	Lane level training shall include an overview of generation of subsystem events and creation of transaction data and their flow through the System.		
920	All Cashless Toll Host System training shall include a review and description of each of the appropriate Cashless Tolling System processes and procedures with actual Cashless Toll Host System Software. All students shall have their own workstation and interact directly with the training environment.		
5.7.2.1	**System Operation Overview**		

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921	The Contrator shall provide a System operation overview training course for the Commission's management personnel who require a general understanding of all aspects of the operation, including but not limited to personnel from senior management, procurement, information technology, marketing and public information.		
922	The system operations training shall include an overview of all aspects of the Cashless Tolling In-lane System and Cashless Toll Host System including DVAS, MOMS, cashless tolling operations, interface to the PTC host system, existing CSC/VPC system, System Maintenance, network, and any other operational area of the Cashless Tolling System.		
923	System Operation Overview training will be conducted in one session with a minimum class size of ten (10) people, for a minimum of eight (8) hours.		
5.7.2.2	**Audit and Reconciliation and Cashless Toll Host System Operations**		
924	The Contrator shall provide an audit and reconciliation training course for the Commission's auditing staff to understand all aspects of the operation, particularly those related to reconciliation, audit and management.		
925	Course shall include training all personnel who require a detailed understanding of the operations of the Cashless Toll System and how to access and view information and reports from the System on items such as status, alarms, performance, transactions and revenue.		
926	Audit and reconciliation training will be conducted in one (1) session with a minimum class size of five (5) people, for a minimum of four (4) hours.		
5.7.2.3	**System Monitoring Staff Training Program**		
927	The Contrator shall ensure the System monitoring staff (PTC Operations Group) are properly trained in the requirements of monitoring the Cashless Tolling System and its uninterrupted operations.		
928	Training on the Cashless Toll Host System shall focus on the Commission performing Level 1 Maintenance.		
929	The Contrator shall provide a minimum of one (1) weeks of classroom and on-the-job training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned monitoring duties.		
930	The Contrator shall provide documentation this initial training has been successfully completed.		
931	The Contrator shall provide various training programs that include but are not limited to:		
	· an in depth explanation of the Cashless Tolling Operations, including all Interfaces, file/data transfers and interconnections;		
	· functions of the monitoring and tools used to manage monitoring tasks;		
	· functions of the MOMS;		
	· Cashless Toll Host System logs, error logs and processing of exceptions;		
	· system dataflow and workflow queues;		
	· explanation of the Dashboard data and analysis;		
	· special use and monitoring tools and		
	· queries and reports.		
932	All System monitoring personnel shall attend the training sessions. The Commission's technical staff also shall attend all training sessions.		
933	The Contrator shall keep accurate training records on all Maintenance and Software support services personnel. The Commission shall be permitted to review and verify Maintenance and Software support services personnel qualifications and training records at any time. Evidence of completion of training by Contrator personnel shall be provided to the Commission upon request.		
5.7.2.4	**Cashless Toll Host System Administration**		
934	The Contrator shall provide a System Users training course for all personnel who require a detailed understanding of the management, troubleshooting and administration of the interfaces, Software, database, applications, configurations and architecture of the Cashless Toll Host System.		
935	Cashless Toll Host System Administration training will be conducted in one (1) session with a minimum class size of five (5) people, for a minimum of eight (8) hours and on-the-job training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned administration duties.		
5.7.3	**Training Facilities**		
936	The Contrator shall conduct training at the classroom facilities at the Commission administrative building for all training and at designated locations identified by the Commission. Following review of Contrator's Training Plan, the Commission will confirm that it has the requisite space to accommodate the level of effort and physical requirements for each training session.		
5.7.4	**Scheduling and Preparation for Training**		
937	It shall be the Contrator's responsibility to provide sufficient notice to the Commission on the types of training it will provide and the timing for each training session. The Commission will identify a list of participants that Contrator shall notify to schedule their participation in the training.		
938	The Contrator shall perform all scheduling activities and shall make every attempt necessary to accommodate the maximum number of persons for each training session given scheduling conflicts. Contrator shall provide sufficient notice to allow participants a reasonable lead time.		

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939	The Contrator shall notify the Commission of the dates or range of dates it would like to hold a training session at the Commission offices and shall coordinate with the Commission Information Technology (IT) office and Administrative Services staff to arrange the proper classroom setting and computer Hardware and Software are installed and the space configured for each training session.		
5.7.5	**Training Materials**		
940	Draft copies of all training materials shall be submitted to the Commission for review, comment and Approval, prior to final printing of quantities required for training.		
941	The Commission shall have the right to require additional interim drafts at no additional cost should draft training materials submitted not be of adequate quality or have missing or incorrect information.		
942	For each course described in the section above, Contrator shall provide the materials listed below.		
5.7.5.1	Instructor Guides		
943	The Contrator shall provide an instructor guide for each training course. The guide shall include the following elements:		
	· course agenda;		
	· course objective;		
	· procedures for managing training session;		
	· resource and facilities required, including work stations, power and communications requirements;		
	· detailed lesson plans;		
	· a description of training aids and items to aid in on the job performance (e.g., where applicable, pocket guides or reference sheets);		
	· test to be administered to assure satisfactory completion;		
	· instructions for using any audio-visual support Equipment or materials and		
	· student survey to obtain feedback on the training sessions and the training materials.		
5.7.5.2	Training Aids		
944	The Contrator shall provide training aids such as mock-ups, scale models, overhead displays, video demonstrations, and simulations as are necessary to successfully complete the course agenda and meet the course objective.		
945	The Contrator shall provide users a way to access training documents, aids and tips in an online, electronic format.		
5.7.5.3	**Student Workbook**		
946	For each course, the Contrator shall provide a student workbook, including but not limited to:		
	· course agenda;		
	· course objectives;		
	· schedule of sessions;		
	· copies of all overheads and visuals and		
	· lesson outlines and summaries.		
947	Materials such as operations and user manuals may be used to supplement the material provided in the student workbook.		
948	To the extent that the user manuals (and training aids) are appropriately detailed and fit for training purposes they shall be used for training. If the Commission deems they are not sufficiently detail then supplementary training material shall be provided.		
949	If such material is used appropriate cross-references shall be included in the Student Workbook so as to identify the complete set of training materials provided to the student.		
5.7.6	**Training Room Set-up and Software Installation**		
950	Contrator shall be responsible for loading any special Software required on the classroom computers (provided by the Contrator).		
951	It is the Contrator's responsibility to ensure that the Software is operating as expected on each of the classroom computers.		
952	It is also the Contrator's responsibility to ensure that appropriate communications are in place.		
VI	**Cashless Tolling System Testing Requirements**		
6.1	**Cashless Tolling System Testing Concept**		
	The Commission has employed a phased approach to deploying cashless tolling on the Commission toll facilities. Given the extended duration of the Project, and the potential differences in the various In-lane System solutions, the Contrator shall conduct the following tests.		
953	Various tests (outlined for reference immediately below and with detailed Requirements in subsequent sections) shall be prepared and conducted by the Contrator, including but not limited to:		
	· factory acceptance test (FAT)		
	· onsite first installation test (OFIT) at baseline tolling points;		
	· installation and Commissioning test at baseline tolling points;		
	· Operational and Acceptance test at baseline tolling points, and		
	·		

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6.1.1	**General**		
	The Requirements described in this section detail the labor, materials, facility, and support Services necessary to test the In-lane Cashless Tolling System and the Cashless Toll Host System and its interface to the PTC host system, the existing CSC/VPC system and SAP.		
	The Contrator shall prepare and conduct tests that validate adherence to the Requirements that guided its Design and development, compliance to Approved Design and Business Rules and demonstrate the Cashless Tolling System functionality.		
954	The Contrator shall be responsible for all aspects of testing performed as part of the Contract and to provide all necessary resources and facilities to conduct all tests including but not limited to:		
	· test support personnel;		
	· varying vehicle types and drivers;		
	· test facilities;		
	· test equipment, tools and safety devices;		
	· test schedule and test sequence;		
	· coordination with existing Contrators;		
	· coordination of lane closures and		
	· conducting the test.		
955	The Contrator shall to the extent possible, develop and use specialized automated testing Software to, including but not limited to:		
	· create test scripts;		
	· control the automated testing;		
	· exercise all conditions, configurations and scenarios;		
	· conduct performance testing;		
	· conduct security testing;		
	· conduct regression testing;		
	· compare actual test outcomes to expected outcomes;		
	· test reporting;		
	· conduct load testing;		
	· conduct user Interface testing;		
	· conduct stress testing;		
	· WAN traffic testing;		
	· conduct sustained operational testing and		
	· conduct sustained burn-in testing.		
956	The Contrator shall provide a defect tracking system, accessible by the Commission, to document and track all defects identified as part of Cashless Tolling System testing and any subsequent actions taken to correct and retest those defects.		
957	The defect tracking system shall be capable of the following, including but not limited to:		
	· rating (severity) defects;		
	· categorizing defects;		
	· prioritizing defects;		
	· logging the date/time the defect was reported;		
	· subsystems and test cases impacted by the defect;		
	· the user who reported the defect;		
	· the erroneous behavior;		
	· the details on how to reproduce the defect;		
	· the developers who worked on the defect and corrective action taken;		
	· date the defect was corrected and formally re-tested;		
	· life-cycle tracking and		
	· reporting.		
6.1.2	**Testing Sequence and Logistics**		
958	The Contrator shall obtain Approval from the Commission and shall have met the entry conditions prior to start of each test, including but not limited to:		
	· Approval of all predecessor tests;		
	· Approved test procedures for each individual test;		
	· Approved test schedule;		
	· successful closeout of all outstanding pre-test issues;		
	· successful dry run testing with results provided to the Commission;		
	· submittal of the latest Approved version of the RTM showing test validation against the requirements and		
	· confirmation that both site and System are ready for testing.		

Functional Requirements - Addendum #1			
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959	After the completion of each test, the Contrator shall submit for the Commission's review and Approval a test report that documents the results of the test.		
960	The test report shall address the following, including but not limited to:		
	· the test summary;		
	· the results of the test;		
	· any anomalies and issues identified;		
	· the corrective action/resolution of each item;		
	· the test data;		
	· calculations and backup data supporting compliance to requirements;		
	· comments provided by the Commission and		
	· the results of any re-tests necessary to successfully complete each testing phase		
961	The Commission shall participate in the testing and witness each test. The Commission shall have full access to the test data and results of the test. Test data and results shall be stored on Commission QA/Test Servers.		
962	Testing will not be considered complete by Commission until all anomalies and "punch-list" items are closed-out, and the final test report is Approved by the Commission.		
963	Testing shall occur per requirement #956, subject to Commission's Approval of the final Master Test Plan.		
6.2	**Factory Acceptance Test (FAT)**		
964	The factory acceptance test (FAT) shall be conducted by the Contrator at the Contrator's facility in actual lanes with the complete test Cashless Tolling System in accordance with the Approved MTP described in Section 5.4.8 Master Test Plan (MTP), detailed testing procedures and Project schedule. The FAT test site shall remain available through throughout the term of the Contract for testing and validating changes, fixes and enhancements to the Cashless Tolling Hardware and Software.		
965	The test configuration shall be representative of the Contrator's cashless tolling solutions.		
966	The FAT shall be conducted by the Contrator to verify that all functional elements of the Cashless Tolling System are in conformance with the Contract Requirements.		
967	Upon the successful completion of the FAT exit criteria and Approval of the FAT by the Commission, the Contrator shall be given the authorization to move forward to the On-site First Installation Test.		
968	The FAT shall validate that the Cashless Tolling System Hardware meets the Requirements of the Contract including but not limited to:		
	· 72 hour burn-in testing for customized and assembled Hardware and		
	· certification of Hardware compliance to environmental requirements.		
969	The FAT shall validate that the Cashless Tolling In-lane System meets the Requirements of the Contract including but not limited to:		
	· accurate assignment and proper framing of each vehicle through various traffic conditions and test scenarios;		
	· accurate capture of images and association of transponders and images to the correct vehicles;		
	· compliance to accuracy requirements;		
	· all exception processing requirements;		
	· correct application of Business Rules;		
	· degraded mode scenarios;		
	· all device failure conditions;		
	· rush-hour traffic scenarios;		
	· redundancy;		
	· mobile enforcement requirements (if option is exercised);		
	· DVAS capabilities;		
	· throughput and load testing using simulated data;		
	· interface to the facility server (if provided) and/or Cashless Toll Host System, and		
	· transaction and image reconciliation.		
970	The FAT shall validate that the Cashless Toll Host System meets the Requirements of the Contract including but not limited to:		
	· user interface;		
	· Dashboards;		
	· Cashless Toll Host functions;		
	· MOMS;		
	· transaction audit;		
	· correct application of Business Rules;		
	· system performance;		
	· reporting;		
	· redundancy;		
	· system loading;		

Functional Requirements - Addendum #1			
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	· compliance of Cashless Toll Host System interface to Approved ICDs;		
	· OCR/ALPR (if the option to implement OCR/ALPR is exercised), and		
	· importing and reporting of existing detailed and summarized transaction data from the existing PTC Toll Host.		
6.3	**Onsite First Installation Test (OFIT)**		
971	The OFIT shall be conducted by the Contrator at the on-site locations identified by the Commission that are representative of the two gantry concepts; the overhead structures and the toll gantries in accordance with the Approved MTP, detailed testing procedures and Project schedule.		
972	The OFIT shall verify the full functionality of the Contrator's Approved solution and its compliance with the Contract requirements and the Approved Design in a controlled, onsite environment using transactions created during live traffic operations and when lanes are closed to traffic. During OFIT testing the system shall be open to live traffic in a test environment and not collecting tolls.		
973	For OFIT the interface to the Cashless Toll Host System and the image server(s) shall be in the test environment.		
974	The testing shall not interfere with the existing system or impact lane operations.		
975	Before the commencement of the OFIT, all Equipment and Software that are required under the Contract shall be in place, in a production environment and configured for revenue operations. The interfaces to the PTC host system and the existing CSC/VPC system shall be connected to the respective test environments as Approved by the Commission.		
976	In order to test the full functionality of the MOMS and System Monitoring during OFIT, all Equipment shall be entered into the System prior to the start of OFIT and the MOMS shall be configured for cashless tolling operations.		
977	The Contrator shall test the vehicle throughput and speed requirements and generate the required number of transactions to prove the System can process transactions accurately and meet the performance requirements.		
978	Performance requirements shall be verified using Approved sample size.		
979	The OFIT shall validate that the Cashless Tolling In-lane System meets the Requirements of the Contract including but not limited to:		
	· operations of in-lane Equipment and their ability to report failures to the MOMS including the UPS;		
	· multi-lane multi-vehicle traffic conditions such as rush-hour traffic (bumper to bumper), vehicle straddling/changing lanes/merging;		
	· accurate assignment and proper framing of each vehicle;		
	· accurate capture and correct association of transponders and images to the correct vehicle;		
	· transaction processing during equipment failures, and degraded modes of operation;		
	· performance requirements using live traffic and controlled vehicles;		
	· Redundancy as defined in this Scope Of Work;		
	· receive and process TSL, VEL (if exercised) and toll rate schedules (if applicable);		
	· DVAS functionality;		
	· E-ZPass Group interoperability using interoperable test accounts;		
	· lane Business Rules and		
	· interface to the Cashless Toll Host System and the existing CSC/VPC system.		
980	An Audit of the lanes shall be conducted using live (not simulated) in-lane traffic to verify that the Cashless Tolling System is processing vehicles accurately and transactions can be reconciled in the System using the audit tools Approved by the Commission.		
981	The OFIT shall validate that the Cashless Toll Host System meets the Requirements of the Contract including but not limited to:		
	· functionality of the Cashless Tolling and MOMS Dashboards shall be verified as it applies to transactions, alarm and failure monitoring;		
	· all failure conditions;		
	· user interfaces and toll collection management functions;		
	· Cashless Toll Host Business Rules;		
	· reconciliation of transactions and revenue;		
	· Cashless Toll Host reports;		
	· Ad-hoc reporting capability;		
	· accuracy of performance reports;		
	· interface to the facility server (if applicable);		
	· interface to the PTC host system, SAP and the existing CSC/VPC system including reconciliation;		
	· conformance with performance, load and stress test requirements;		
	· security requirements;		
	· archival and purging requirements;		
	· MOMS asset management; failure notification; work order tracking and performance reporting;		
	· Cashless Toll Host System redundancy requirements, and		
	Cashless Toll Host System data resiliency requirements.		

Functional Requirements - Addendum #1			
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982	As part of the OFIT, an end to end testing shall be conducted that validates the following functionality, including but not limited to: · System's ability to process and post transactions to the Cashless Toll Host System and on to the existing CSC/VPC system, and · The successful transfer of images from the In-lane Systems to the image server(s) and on to the existing CSC/VPC system;		
6.4	**Installation and Commissioning Test**		
983	The Installation and Commissioning test shall be conducted by the Contrator on each lane as a part of the Contrator's Cashless Tolling System installation in accordance with the Approved MTP, detailed testing procedures and Project schedule.		
984	The Installation and Commissioning test shall validate the functionality and operational status of the lanes including installation and configuration of all Equipment and Software. The lane operations shall be verified end to end upon the completion of the installation checkout prior to opening the cashless tolling lanes for revenue collection.		
985	During the Installation and Commissioning test every piece of in-lane Equipment and its interface to the zone controller shall be verified to be fully operational. The zone controller, its interface to the Cashless Toll Host System and the transmission of images to the existing CSC/VPC system via the image server(s) shall be validated to ensure that the interfaces are in place and the Cashless Tolling System is ready for revenue collection.		
986	A Commissioning test shall be conducted on the Cashless Toll Host System and shall include the image server(s) and the interfaces to the existing CSC/VPC system and the PTC host system.		
6.5	**Cashless Tolling System Operational and Acceptance Test**		
987	The Cashless Tolling System Operational and Acceptance test shall be conducted by the Contrator at each Cashless Tolling plaza location of the Cashless Tolling Project in accordance with the Approved MTP, detailed testing procedures and Project schedule.		
988	The Cashless Tolling System Operational and Acceptance Test shall be conducted for each Cashless Tolling implementation upon authorization by the Commission to commence such testing. The Cashless Tolling System shall be observed in live revenue operations by the Contrator and the Commission for a minimum of four (4) calendar months.		
989	The objective of the Cashless Tolling System Operational and Acceptance Test is to ensure that the Cashless Tolling System Software and Hardware functions over the test period with limited manual intervention in live operations. It is intended to confirm that the Cashless Tolling System and the network are sized and configured correctly and data is processed without interruption.		
990	The Cashless Tolling System Operational and Acceptance Test shall validate the interface of the Cashless Tolling System to the PTC host system and the existing CSC/VPC system and reconcile the transactions and images end to end.		
991	The Cashless Tolling System Operational and Acceptance Test shall validate the operation and accuracy of the Cashless Tolling System common to the Commonwealth of Pennsylvania.		
992	During the test period, System accuracy, performance of the system and operations shall be validated including: · all System accuracy requirements specified in the Contract using representative sample size for each facility under test; · all maintenance performance requirements; · all system performance requirements; · a two hour vehicle audit during AM and PM peak hours for a total of four (4) hours on each lane at each tolling point that is part of the Cashless Tolling location in test; · transaction processing in accordance with Commission Business Rules; · correct classification of vehicles and assignment of toll and · monitoring of all interfaces for the accurate transfer and processing of all records.		
993	System reliability and auditability shall be verified manually and through tools and reports provided in the System.		
994	Dashboards and reports shall be verified daily for accuracy and reconciled to operations and interface files. Queries and detailed reports shall be generated to validate the daily, weekly, monthly, yearly and comparative reports and compared to reports.		
995	The alarms displayed on the MOMS and all interface status notification shall be verified to be accurate.		
996	Failure of the Cashless Tolling System to meet a performance requirement shall result in the restart of that particular test until such time the accuracy requirements are met.		
997	The Cashless Tolling System Operational and Acceptance Test shall be repeated until the Commission is satisfied that the Cashless Tolling System meets the Contract requirements as set forth in the Contract at each tolling point.		
998	The Cashless Tolling System Operational and Acceptance Test shall be conducted on the baseline tolling points (Findlay/Southern Beltway) upon authorization by the Commission to commence such testing. The Cashless Tolling System shall be observed in live revenue operations by the Contrator and the Commission for a minimum of two (2) monthly audit cycles.		

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6.5.1	Cashless Tolling System Acceptance		
999	Upon the successful completion of Operational and Acceptance Test for the Cashless Tolling System for each implementation of the Cashless Tolling Project, the closure of all punch-list items and completion and submission of all Contract required documents as set forth in the Contract, the Contrator shall be given the Acceptance for the Cashless Tolling System for each Cashless Tolling implementation.		
VII.	Maintenance and Software Services		
	The Contrator shall provide all Maintenance activities associated with the Cashless Tolling System Maintenance and Software Support Services throughout the term of the Contract as further set forth in this Scope of Work. The requirements described in this section detail the Hardware Maintenance and Software and Administrative Support Services for the Cashless Tolling System including any existing Equipment integrated into the Contrator's solution. The tiered Maintenance levels described below and detailed in Attachment 11: Maintenance Responsibility Matrix will become effective upon completion of the Warranty period (Year 1 Maintenance). Cashless Toll Host System Maintenance will be performed and provided by Commission personnel as detailed below.		
	The Contrator shall provide Maintenance and Software Support Services for:		
	1. All Year 1 Maintenance (Warranty Year) Work for the entire Cashless Tolling System;		
	2. All subsequent years Cashless Tolling In-Lane Systems and LAN Maintenance and monitoring and		
	3. All subsequent years Cashless Toll Host System Software, Server and Database Administration defined below.		
	The Commission will provide Maintenance and Support Services for:		
	1. Network Maintenance Services for the Wide Area Network (WAN) and		
	2. Onsite Monitoring for the Cashless Toll Host System, exclusive of those Services defined as Contrator Level 2 Maintenance.		
	Maintenance for the Cashless Tolling In-Lane Systems and Toll Host Systems shall be the responsibility of the Contrator staff, including all the Maintenance Levels described below. For the Cashless Toll Host System, responsibilities by Maintenance Level are dependent on the scope. Onsite monitoring of the Cashless Toll Host System will be performed by Commission personnel 24x7. The Maintenance concept for preventive; pervasive; corrective; security and emergency Maintenance for the Cashless Toll Host System is defined by the levels listed below.		
	Maintenance Level 1: This level of maintenance includes onsite monitoring of system logs and Cashless Toll Host System maintenance alarms; confirmation of file transmissions; confirmation of system backups, and deploying third-party security Software updates that can be handled either solely by Commission technical staff or at the direction of remote Contrator personnel. The responsibility for this level of maintenance will be performed 24X7 and staffing responsibility depending on the physical location of the Cashless Toll Host System as defined below:		
	Maintenance Level 2: This level of maintenance is performed by the Contrator and includes any Cashless Toll Host System activities that can be executed and completed remotely by the Contrator including those maintenance tasks escalated to the Contrator from Commission Level 1 services. Examples include Database maintenance and Software correction that can be performed remotely by the Contrator in coordination with the Commission. This level could potentially involve each of the types of Maintenance, including pervasive and corrective Maintenance. Contrator shall notify the Commission prior to performing any Level 2 Maintenance corrective activities or any activities that are outside of normal monitoring, such as process resets or System reboots. Level 2 Maintenance also includes preventive maintenance and security findings remediation.		
	Maintenance Level 3: This level of Maintenance is performed by the Contrator and includes any Cashless Tolling Host Maintenance Services that require Contrator presence onsite, for example re-configuration of the Cashless Toll Host System.		
7.1	Cashless Tolling System Warranty Program		
1000	The Contrator shall be responsible for the implementation and administration of a Warranty Program for all Hardware, Contrator Software and third-party Software provided under this Contract.		
1001	The Contrator shall maintain warranty records and service agreements for all Hardware and third party Software in MOMs, and shall review Software upgrades and available patch reports to keep the Cashless Tolling System current.		
7.1.1	Hardware/System Warranty Program		
1002	The Hardware Warranty period for all Equipment furnished under this Contract except server Hardware shall be for a period of one (1) year, commencing on the date of Approved installations of each tolling location.		
1003	In the one (1) year Hardware Warranty period, Warranty Maintenance shall include all Services required to maintain the System Hardware at required performance levels.		

Cashless Toll Host Location	Responsibility
PTC Data Center	Commission
Off-Site or Cloud based	Contractor

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1004	In the Warranty period the Commission shall not be charged for any Services related to Maintenance beyond those associated with force majeure events such as vandalism, relocation of Equipment at the request of the Commission, or damage clearly caused by events outside the control of the Contrator, as set forth in the Contract.		
1005	All Equipment mounting Hardware and brackets provided as a part of this Scope of Work shall be warrantied for the Contract Term.		
1006	The one (1) year Warranty on any additional Approved installed and replaced Hardware and Equipment shall commence when the Hardware and Equipment are installed.		
1007	The Contrator shall take all reasonable and prudent steps to ensure that all Hardware and third party Software used by the System is supported by the third party vendor and all warranties remain in effect.		
7.1.1.1	**Server Hardware Warranty and Support Services**		
1008	All server Hardware shall have a full manufacturer's Warranty and support services for a period of minimum five (5) years beginning with the Acceptance of the Cashless Tolling System for the Cashless Toll Host and for the server Hardware at each tolling point beginning with Acceptance at that tolling point.		
7.1.1.2	**Third Party Software Warranty**		
1009	All third party Software shall have a full manufacturer's Warranty and Upgrade Services, which shall be no less than a period of five (5) years beginning with the Acceptance of the Cashless Tolling System.		
7.1.1.3	**Software Warranty**		
1010	The Cashless Tolling System Software shall have a full Warranty against defects and failures beginning at System Acceptance through the end of the Contract Term subject to the applicable provisions within the Agreement.		
7.2	**General Description of Cashless Tolling System Maintenance and Software Support Services**		
1011	The Contrator shall provide one hundred percent (100) percent of the Cashless Tolling In-Lane Systems and LAN Maintenance Services.		
1012	The Contrator shall provide Level 2 and Level 3 Cashless Toll Host System Hardware, Software, Database and System Administration Maintenance Services including operating system and Software security updates through a coordinated effort with the Commission.		
1013	Hardware Maintenance Services under this Contract shall be for a period as set forth in the Contract from Acceptance of each Cashless Tolling plaza location of the Project. The first year of Hardware Maintenance for each Cashless Tolling plaza location shall be covered under the System Warranty Program as set forth in Section 7.2.1.		
1014	The Contrator shall provide Software Maintenance Services as described in this Scope of Work.		
1015	Software Maintenance and Support Services under this Contract shall be for a period as set forth in the Contract from Acceptance of the Project. A Software Warranty shall be provided for the term of the Contract as set forth in Section 7.2.1.3.		
1016	The Contrator shall be responsible for supporting and maintaining the Cashless Tolling System for any time period in which the System is installed, Commissioned and placed into revenue service but has not passed required testing until such time as the Warranty Period commences. The Maintenance of the Cashless Tolling System provided under this Contract prior to start of Warranty is not included in the term of the Maintenance and Software Support Services.		
1017	The Contrator shall be responsible for supporting and maintaining the Cashless Tolling System at the test plazas until the test plazas are Accepted and Warranty has commenced.		
1018	The one (1) year Cashless Tolling System Warranty for each implementation shall commence after the Acceptance of each implementation of the Cashless Tolling Project. The one (1) year Cashless Tolling System Warranty on all other new tolling points deployed by the Contrator shall commence after the Acceptance of the Cashless Tolling System for each subsequent implementations of the Cashless Tolling Project. The one (1) year Cashless Toll Host System Warranty shall commence after the Acceptance of the base Contract implementation of the Project.		
1019	All changes and modifications to the Cashless Tolling System shall be Approved by the Commission and shall follow the Commission Attachment 13 - ETC System Change Control Procedures V1.6.		
1020	The Services and Work performed under the Contract are considered highly confidential and the Contrator personnel shall at all times comply with the Commission security and privacy requirements. Contrator employees shall not discuss their Work with unauthorized personnel or any individuals not directly associated with the Commission.		
7.3	**Cashless Tolling System Maintenance and Software Support Services - Contrator**		
	The Maintenance and Software Support Services shall include monitoring; preventive; pervasive; corrective; security related and emergency Maintenance Services and certain upgrades and enhancements to be performed on all elements of the Cashless Tolling System. Payment for Maintenance and Software Support Services on the Cashless Tolling System for each Cashless Tolling point implemented of the Project shall commence after the expiration of the one-year Cashless Tolling System Warranty Period. The Contrator shall provide the following Cashless Tolling System Maintenance and Software Support Services at the levels defined in Section VII.		
7.3.1	**2.3.1 Cashless Tolling In-lane Systems Hardware Maintenance and Software Support Services**		
	Upon the completion of the Warranty Program at each Approved tolling point, the monitoring and Maintenance functions described below shall be performed by the Contrator.		

Functional Requirements - Addendum #1			
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1021	During and after the Warranty period the Contrator shall maintain the spare parts inventory in the MOMS and update accurate Equipment inventory status in the MOMS.		
1022	The PTC Operations Group shall monitor the System for failures and alarms, and confirm a MOMS work order has been created for each failure as defined regardless of Maintenance Level.		
1023	The Contrator shall automate the MOMS work order process to the maximum extent possible to anticipate and automate work orders. If a MOMS work order has not been created, the Contrator or the PTC Operations Group shall create a work order in MOMS and assign it to a technician for Maintenance action or troubleshooting.		
1024	The Contrator shall perform the necessary Maintenance and close the MOMS work order upon confirmation that the failure has been successfully corrected. The Contrator shall notify the PTC Operations Group that the repair action is complete and work order has been closed.		
1025	The Contrator shall perform all daily, weekly and scheduled preventive Maintenance on all Cashless Tolling In-lane System Hardware.		
1026	Equipment racks and panels shall be inspected and maintained by the Contrator in full operational, orderly condition, and free of debris and dirt.		
1027	The Contrator shall inspect and maintain all Contrator provided equipment mounting Hardware and brackets provided as a part of its Scope of Work and shall also inform the Commission of any potential problems.		
1028	The Contrator shall inspect and test cables, wiring and terminations to detect problems and degradation. Any item not in compliance with Contract requirements shall be replaced by the Contrator at no cost to the Commission unless such failure is considered non-chargeable as described in Section 2.5.4.2 Non-Chargeable Failures.		
1029	The Contrator shall maintain the Cashless Tolling In-lane System local area network that includes all Contrator network connections in the toll equipment building and interconnections between the toll equipment buildings as defined in Attachment 3b: PTC Communications Network Responsibilities.		
1030	The Contrator shall provide monitoring and troubleshooting as part of Maintenance Services for the Cashless Tolling In-lane System including, but not be limited to:		
	· zone controllers;		
	· AVI system;		
	· AVC system;		
	· LPICPS components and controllers;		
	· OCR/ALPR Software(if the option to implement OCR/ALPR is exercised);		
	· facility servers and Software (if provided);		
	· DVAS cameras;		
	· all cables, wiring, junction boxes, and terminations;		
	· all conduits and cable trays;		
	· all In-lane System electronics and controllers;		
	· Contrator supplied LAN equipment and		
	· all In-lane Contrator and third-party Software.		
1031	All System administrative functions, if not automated, shall be performed by the Contrator at regular intervals as part of the System preventive Maintenance Services according to the Approved Maintenance Plan to ensure System performance is optimized. All such System administrative functions shall be scheduled as preventive maintenance work orders through MOMS and tracked.		
1032	Continuous monitoring of System operations shall be performed by the Contrator in conjunction with the Commission to verify System is functional; security posture is adequate; processes are being executed as scheduled; files are transmitted as specified, and System is operating to Contract performance requirements.		
1033	Continuous monitoring by the Contrator shall include but not be limited to:		
	· confirming and verifying receipt of all the MOMS messages and Alerts;		
	· verifying the MOMS is receiving and processing System events and reporting the correct status;		
	· evaluating sample transactions data for exception;		
	· confirming data transmission to the Cashless Toll Host System;		
	· confirming image and transaction transmission to the existing CSC/VPC systems;		
	· performing routine diagnostics on all in-lane subsystems;		
	· verifying processes, programs and scheduled jobs are successful;		
	· reviewing comparative reports to identify System degradation;		
	· confirming successful transfer of transponder status list to the lanes;		
	· reviewing OCR/ALPR results (if the option to implement OCR/ALPR is exercised) and poor quality images;		
	· monitoring the DVAS video and event data;		
	· reviewing sample images;		
	· correcting identified performance issues;		
	· evaluating storage requirements;		

Functional Requirements - Addendum #1			
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	· verify time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold, and		
	· reviewing error logs and Alerts.		
1034	The Contrator shall perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool of the Cashless Toll System and produce ensuing reports at the request of the Commission.		
1035	The Contrator shall monitor for intrusion attempts and prevent all unauthorized access and intrusions at all levels and report such events to the MOMS. Any intrusion, compromise or breach must be reported to Commission IT Security within 12 hours of detection.		
1036	The Contrator shall monitor notifications and initiate corrective actions upon Commission approval on the Cashless Tolling System to meet requirements.		
1037	The Contrator shall perform any Maintenance, daily, weekly, or periodic, required to maintain the System at required performance levels (for example: archival and purging in accordance with the Commission's retention policy).		
1038	The Contrator shall update all Software drivers to meet any new standard Operating Systems as they become available and such updates shall be deployed in accordance with Commission standards.		
1039	The Contrator shall retrieve data manually from the zone controllers and download transponder status list and toll rate and schedule files in the event there is an extended communications failure.		
1040	The Contrator shall re-establish or re-install System files, programs and parameters, as required, following a failure or damage to the System and return lanes to fully operational condition.		
1041	In the event of a declared disaster the Contrator shall perform procedures as needed and return lanes to fully operational condition.		
1042	The Contrator shall perform OCR/ALPR updates as required in accordance with the Commission ECO procedures within an Approved Commission time frame to support license plate changes if the option to implement OCR/ALPR is exercised.		
1043	As part of the Software Support Services the Contrator shall develop and test Software as required to accommodate corrective action, changes to Business Rules or lane configurations in accordance with the Commission ECO procedures. Scope shall include provision of evidence packages and release notes detailing changes for Commission review and Approval, installation of new Software and confirmation of successful installation.		
1044	The Contrator shall analyze daily and weekly trends to identify problems, including but not limited to:		
	· high number of transactions without transponder;		
	· high number of Class Mismatch transactions;		
	· abnormal changes in traffic counts and class;		
	· high number of exceptions or unusual occurrences;		
	· high number of inValid Transponder transactions;		
	· abnormal changes in transponder counts and status changes and		
	· high number of rejected images.		
7.3.2	**Cashless Toll Host System Server and Database Administration, Maintenance and Software Support Services**		
	The requirements in this section describe the services to be provided by the Contrator under the Maintenance and Software Support Service for the Cashless Tolling System.		
1045	The Contrator shall provide Maintenance and Software Support Service for all elements of the Cashless Toll Host System when located at a Commission Approved offsite location or Cloud environment in all environments required in the Contract including but not limited to:		
	· Cashless Toll Host System Hardware;		
	· operating systems;		
	· databases;		
	· application Software;		
	· third-party Software patches;		
	· security updates;		
	· Software configuration and		
	· Software version control.		
NA	The Commission may provide Maintenance and Software Support Service for elements of the Cashless Toll Host System when located at the PTC Data Centers including but not limited to:		
	· operating systems;		
	· third-party Software patches and		
	· security updates;		
1046	The Contrator shall provide continuous 24x7 system administration services coverage on the Cashless Toll Host System, if off-site or Cloud location, to ensure that it is performing and will continue to perform at a satisfactory level.		

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1047	The Contrator support staff shall be available on-call 24x7 to investigate and perform maintenance for those failures escalated to the Contrator.		
1048	System administration services shall include monitoring and corrective action to ensure System performance is in accordance with requirements of this Scope of Work. This shall include but is not limited to:		
	· monitoring Cashless Toll Host System Hardware at the primary and secondary locations including servers; storage devices and backup systems;		
	· verifying processes, programs, and scheduled jobs are successful;		
	· confirming all transactions and images are successfully transmitted to the receiving Systems;		
	· confirming all messages described in the ICD are being successfully exchanged between the Cashless Tolling Systems, existing CSC/VPC systems, SAP and PTC Toll Host system;		
	· confirming applications are functional and available to Authorized Users;		
	· confirming all scheduled reports are successfully generated and available to Authorized Users;		
	· verifying all processes are functioning and data and images are moving successfully though the queues;		
	· verifying all third-party interface are functioning and successfully exchanging files;		
	· scheduling of preventive, corrective and predictive Maintenance activities;		
	· performing any daily, weekly, or periodic Maintenance required to maintain the System at required performance levels (for example: indexing and tuning databases; archiving and purging in accordance with the Commission's retention policy);		
	· maintaining and updating records of all Maintenance events and activities in the MOMS;		
	· performing third-party Software or firmware upgrades in conjunction with the Commission, as required and to be compliant to security requirements including but not limited to performing security Software upgrades, database upgrades and operating system upgrades at offsite or Cloud locations;		
	· support upgrades performed by the Commission for third-party Software or firmware as required to be compliant to security requirements including but not limited to performing security Software upgrades and operating system upgrades at PTC Data Centers;		
	· contact with the Commission, operations and Contrators regarding System issues, performance, security posture, Software Release and Maintenance scheduling;		
	· performing Approved manual actions, adjustments and updates to the System data based on predefined criteria to correct issues and as Authorized by the Commission;		
	· re-establishment or re-installation of System files, programs and parameters, as required, following a failure or damage to the System;		
	· monitoring of error logs and System logs;		
	· restoration testing of backups (Software and data) to be performed yearly in coordination with the Commission with the results reported back to the Commission.		
	· Maintenance of up-to-date Software backups (all System Software and data);		
	· installation of new Software and confirmation of successful installation;		
	· verifying time synchronization is occurring as configured and System clocks are not drifting beyond acceptable threshold;		
	· assisting Commission administrative staff as requested by the Commission;		
	· troubleshooting Cashless Tolling System issues;		
	· creation of Ad-hoc reports requested by the Commission;		
	· generation of queries as requested by the Commission, and		
	· analysis of data as requested by the Commission.		
1049	Software support services shall include monitoring and corrective action to ensure System performance is in accordance with requirements of this Scope of Work, to include database management and operation. This shall include, but is not limited to:		
	· investigation and analysis of errors and exceptions and taking corrective action including correcting the problem and reprocessing the data;		
	· monitoring of notifications, and initiating corrective actions on application programs to meet requirements;		
	· updates to the Cashless Tolling System and application to support upgrades to Hardware or third-party Software;		
	· updates to the Cashless Tolling System and application to support all changes to Business Rules and Cashless Tolling System configurable parameters, and deploy changes in production according to Commission Approved deployment schedule;		
	· updates to the Cashless Tolling System and application to support changes to E-ZPass Group ICD including the addition of new E-ZPass Group Agencies;		
	· updates to the Cashless Tolling System and application to support the addition of new Interoperable Agencies;		
	· updates to the Cashless Tolling System and application to support changes to continue its compliance to updated security requirements, and		

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	· updates to the Cashless Tolling System and application to support legislative and statutory changes.		
1050	As part of the Software Support Services the Contrator shall develop and test Software as required to accommodate corrective action, changes to Business Rules or lane configurations in accordance with the Commission ECO procedures. Scope shall include provision of evidence packages and release notes detailing changes for Commission review and Approval, installation of new Software and confirmation of successful installation.		
7.4	**Cashless Tolling Network Maintenance Support Services – Commission Responsibility**		
	Commission technical staff will provide Maintenance Support Services for the Commission Toll System WAN Network as specified in this section. In addition Commission technical staff will provide 24x7 monitoring services for the Cashless Toll Host System if it is located at the PTC Data Center. If the Cashless Toll Host System is located at a remote location or privately hosted Cloud site, it will be the responsibility of the Contrator to provide 24x7 monitoring services for the Cashless Toll Host as in detailed in Attachment 11: Maintenance Responsibility Matrix.		
	Commission technical staff will maintain and monitor the WAN system that includes:		
	· connection of the PTC Primary Data Center to the network equipment at the toll equipment building at each tolling point location;		
	· connection of the PTC Primary Data Center to the CSC/VPC primary and disaster recovery locations;		
	· connection to the existing PTC Toll Host locations and		
	· operating system and Software patching levels for the Commission provided network equipment security postures.		
	The Commission will upgrade and update the network security to ensure the Commission network is always in compliance with updated security standards.		
	If the Cashless Toll Host is located at the PTC Data Center, the Commission will have additional responsibility for Operating systems and Database updates, security updates and 3rd party patches.		
1051	The Contrator shall provide Commission Approved diagnostic aids, tools and Equipment to perform monitoring services, as necessary to assist Commission technical staff monitor the Cashless Toll Host System.		
7.5	**Updates to Maintenance Plan and Other Maintenance Related Documentation**		
1052	The Contrator shall update the Maintenance Plan and other Maintenance documentation to reflect any changes to the policies or procedures developed by the Contrator and Approved by the Commission, for the Cashless Tolling System Maintenance services. The Maintenance Plan shall be updated and uploaded to the online System documentation library every year for review and Approval. However, sections of the Maintenance Plan or its Appendices shall be submitted for review and Approval as the changes are identified. A version update sheet shall be included with the Maintenance Plan, and the Maintenance Plan on file shall have the most recent version from the configuration management database.		
7.6	**Maintenance Requirements**		
7.6.1	**Preventive Maintenance**		
1053	The Contrator shall provide and perform onsite Preventive Maintenance on the Cashless Tolling In-lane System Hardware, Cashless Toll Host System Hardware, Contrator LAN communications equipment and Software in accordance with the Approved Preventive Maintenance plan.		
1054	The Contrator shall inspect all Contrator installed Equipment, both major components and support components (fans, equipment racks, storage units) that constitute the Cashless Tolling System and shall make such repairs; cleaning; adjustments, and replacements of components as necessary to maintain the Equipment in normal operating condition in accordance with the Approved Preventive Maintenance plan.		
1055	In addition to required ongoing Contrator monitoring the servers and data processing units shall be actively monitored by the Contrator to verify that storage space is not reaching limits, disks are not fragmented or damaged, Software being used is of latest version per the configuration management and data is being processed and transferred in an appropriate manner.		
1056	Transaction and image processing volumes and times shall be monitored at the lane by the Contrator and Systems optimized for performance with Commission Approval.		
1057	Report generation times, System access times, and System response time shall be monitored by the Contrator to ensure performance meets the Contractual requirements.		
1058	The Contrator shall include all Equipment and Systems as part of the Preventive Maintenance in accordance with the original Equipment manufacturer's guidelines. Any variations or exceptions shall be noted by the Contrator and Approved in advance by the Commission.		
1059	Preventive Maintenance shall be performed by the Contrator during the normal working hours when Maintenance technicians are scheduled to be onsite. Diagnostic aids, tools and Equipment Approved by the Commission to perform Preventive Maintenance equipment analysis shall be provided by the Contrator, as necessary.		
1060	Preventive Maintenance requiring lane closure shall be scheduled by the Contrator for off-peak travel periods; evenings; Saturdays, and Sundays and coordinated with the Commission, so that the Work shall not interfere with normal traffic flow, unless otherwise Approved by the Commission.		

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1061	The Contrator shall provide a Preventive Maintenance schedule, to be Approved by the Commission, as part of the Maintenance Plan. The schedule shall detail the preventive Maintenance to be performed on each Equipment item and system. The schedule shall provide a description of the Work to be performed, expected duration and the frequency.		
1062	The preventive Maintenance schedule shall be entered by the Contrator into the MOMS and work orders shall be automatically created to alert Contrator staff of required preventive Maintenance. Failure of the Contrator to perform required preventive Maintenance in accordance with the Approved schedule shall result in liquidated damages, as specified below in the Maintenance Performance Requirements Section 7.22.		
7.6.2	**Predictive Maintenance**		
1063	The Contrator shall establish a Predictive Maintenance program by which failure analysis can be determined by identifying potential failures through the MOMS records. The failure analysis shall take into account either or both specific components and sub-systems. This information shall then be used to investigate and correct problems and failures that could disrupt toll collection operations.		
1064	The Contrator shall maintain all failure analysis documentation on site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.		
7.6.3	**Pervasive Maintenance**		
1065	The Contrator shall establish a Pervasive Maintenance program by which failure analysis can be determined by identifying continuing or repetitive failures through the MOMS records. The failure analysis shall take into account either or both specific components and sub-systems. This information shall then be used to investigate and correct problems and failures that continue to occur on a particular item of equipment, sub-system, or component.		
1066	The Contrator shall maintain all failure analysis documentation on site and provide the information, including charts or other analysis tools and shall submit the analysis as part of its monthly report.		
7.6.4	**Corrective Maintenance**		
1067	All Work performed by the Contrator to correct problems to meet the requirements of the Contract or Software defects shall be considered as Corrective Maintenance and shall be corrected based on priority level within the time specified within this scope of work under Maintenance Coverage and Response Times. Such problems include but are not limited to:		
	· failure of System functions;		
	· failure of processes and programs;		
	· report issues;		
	· application failures;		
	· toll system network issues;		
	· inadequate security posture;		
	· degraded System or component performance, and		
	· non-conforming availability or MTBF.		
1068	Corrective action that require modification to the Software shall be reviewed by the Commission and corrections deployed in accordance with Approved release notes and Commission schedule.		
1069	The Commission shall be notified before any corrective Maintenance is performed.		
1070	Notwithstanding the foregoing, for repeated failure of Equipment, components, or Systems, the Contrator shall undertake an investigation as outlined in Section 7.7.3. If the problem is determined by the Commission to be a pervasive defect, the Contrator shall be responsible for the replacement and repair of the problem Equipment, component, or System at no additional charge to the Commission.		
7.6.5	**Onsite Corrective Maintenance for Cashless Toll Host System**		
1071	Upon the confirmation that a failure/work order qualifies as Level 3 Onsite Corrective Maintenance, the Contrator shall submit a request to the Commission for Approval to perform the Level 3 Corrective Maintenance in accordance with the of the Commission ECO process.		
1072	The Contrator shall submit a schedule for performing the Onsite Corrective Maintenance and coordinate all travel with the Commission.		
1073	Upon Authorization to perform the Onsite Corrective Maintenance, the Contrator shall initiate the Work. An authorized Commission representative shall be notified when the Contrator personnel is onsite at the Cashless Toll Host facility performing the corrective action.		
1074	The details of the Work shall be recorded in MOMS by the Contrator and upon verification of the corrective action by the Commission, the Contrator Work on this corrective action item shall be considered complete.		
7.6.6	**Upgrades and Enhancements**		
1075	Upgrades and enhancements required for reasons such as to meet changes to standards, statutes or interoperability Equipment changes or the addition of new functionality; or, that provide the Commission with a demonstrable benefit in performance, costs or productivity, shall be proposed with costs and schedule by the Contrator in accordance with the requirements of the Commission ECO process, as set forth in the Contract.		

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1076	Software modifications that are required to maintain and support the System as a part of the normal course of business such as version changes, configuration or parameter changes or minor changes to Software or code such as changes to the existing ICDs; or Software modifications required to ensure System is compliant to specified standard (for example security) or, changes that improve the Contrator's ability to maintain and support the System, shall not be considered upgrades or enhancements and shall be provided by the Contrator at no cost to the Commission. All such Software modifications shall be in accordance with the of the Commission ECO process.		
7.7	**Maintenance Coverage and Response Times**		
1077	The Contrator shall post a weekly schedule identifying personnel and times for onsite and on-call Maintenance. Commission Approval is required for any change in Contrator staff. The Contrator shall provide to the Commission the updated active personnel list and contact information when there is a change in personnel.		
1078	Response to calls and repair times shall be determined by priority as described below. Contrator failure to meet the response and repair time criteria described below (requirement #1080) shall result in liquidated damages as specified in Section 7.22.		
1079	Regardless of Level 2 or Level 3 service, onsite or on-call, acknowledgement of receipt of notification of a Maintenance issue or human acknowledgment of a failure shall not exceed thirty (30) minutes after the failure notification was recorded or problem was reported.		
1080	Priority of failures shall be defined during the Design phase. Time to respond and complete repair are determined by priority and is defined as follows:		
	· Priority 1: Defined as any malfunction or fault or Software defect that results in the immediate loss of revenue; security breach; closure of lanes outside of the Commission lane closure requirements; hazard to personnel or driving public; loss of audit data; loss of redundancy in any redundant System components; loss of functionality that impacts E-ZPass Group Agencies or failure that negatively impacts Lane or Cashless Toll Host System operations.		
	o For In-lane Systems Maintenance this priority shall have a two (2) hour time to respond and complete repair.		
	o For Level 2 Maintenance this priority shall have a two (2) hour time to respond and complete repair.		
	o For Level 3 Maintenance this priority shall have two (2) hour time to complete repair once Approval to commence Work is provided by the Commission and Maintenance personnel is onsite and ready to perform the repair. The Contrator shall make every effort to be onsite within twenty-four (24) hours of Approval to commence Work.		
	· Priority 2: Defined as any malfunction or fault that degrades the System performance but not the operational ability of the System. It includes, but is not limited to inaccurate reporting, inability to reconcile revenue or loss of System functionality that impacts access to data.		
	o For In-lane Systems Maintenance this priority shall have a four (4) hour time to respond and complete repair.		
	o For Level 2 Maintenance this priority shall have a four (4) hour time to respond and complete repair.		
	o For Level 3 Maintenance this priority shall have two (2) hour time to complete repair once Approval to commence Work is provided by the Commission and Maintenance personnel is onsite and ready to perform the repair. The Contrator shall make every effort to be onsite within forty-eight (48) hours of Approval to commence Work.		
	· Priority 3: Defined as any action or event that has the potential to result in a malfunction or degrading of the System performance but has not impacted performance and is not anticipated to immediately impact performance.		
	o For In-lane Systems Maintenance this priority shall have a twenty four (24) hour time to respond and complete repair.		
	o For Level 2 Maintenance this priority shall have a twenty-four (24) hour time to respond and complete repair.		
	o For Level 3 Maintenance the Contrator and the Commission shall agree on the time period for onsite correction but time to respond and complete repair shall be no longer than three (3) calendar days of Approval to commence Work.		
1081	For Priority 1 and priority 2 failures the Contrator shall provide dedicated resources until the issue has been resolved to the Commission's satisfaction.		
1082	Outages and tasks performed under the Preventive Maintenance period shall be defined as Priority 4. The System shall be available and fully operational within the Approved time schedule for such activities and upon completion of the Preventive Maintenance period. Any failures generated or resulting from Preventive Maintenance activities shall be accounted for as Priorities 1, 2 or 3 and be addressed in accordance with these requirements.		
1083	Response and Repair time is defined as the combined time from when failure occurred or problem was reported to when the repair or correction of the failure occurred; the period of time beginning when the failure occurred (failure time) and ending when the fault condition is corrected and returned to normal operations.		
1084	Response and repair times for every Maintenance event shall be recorded in the MOMS and reported and such reports shall be provided to the Commission in accordance with the reporting requirements of this Scope of Work.		
7.8	**Notifications**		
1085	The entry of a problem (either by the System or an Authorized User) into the MOMS shall constitute the start of the acknowledgment time for purposes of measuring the Contrator's acknowledgment time and response/repair time.		
	For purposes of measurement of performance and for the development of Maintenance policy and procedures, notification of System malfunctions, problems and discrepancies may be provided to the Contrator in three (3) different methods, summarized below.		

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1086	· Verbal Notification: Defined as an in-person notification or telephone call. In all cases, the first conversation with, or notification of the Contrator shall signify the start of the response time for purposes of measuring the Contrator's response time. All verbal notifications shall be recorded in MOMS by the Contrator. · Written Notification: Defined as a written description of a problem or condition, typically provided by the Commission or its representative. Written notification could be faxed, texted, or emailed to the Contrator by a customer or user. The time of receipt of fax, message or email shall signify the start of the response time for purposes of measuring the Contrator's response time. All written notifications shall be recorded in MOMS by the Contrator. · MOMS Notification: Defined as an automatic notification through the MOMS identifying a problem within the Cashless Tolling System that is the Maintenance responsibility of the Contrator and sending out an automatic Alert message by email or text to a Contrator's Maintenance staff to respond to the failure. In addition to the Contrator notification, the Alert shall be posted on the MOMS and available via reports. The presence of a MOMS notification in the System shall constitute the start of the response time for purposes of measuring the Contrator's response time.		
7.9	**Recording of Maintenance Activities**		
1087	The Contrator and the Commission shall utilize the MOMS for initiating the work orders. MOMS shall be utilized for recording and tracking all Maintenance and Software Support Services performed on the Cashless Tolling System. All Equipment provided under this Contract shall be tracked through MOMS from the purchase to their disposal.		
1088	In all cases, it shall be the Contrator's responsibility to log all reported Maintenance activities into the MOMS. The Contrator shall also be responsible for documenting all information and issues related to a failure condition, including all actions taken to complete the correction into the MOMS.		
1089	The work order shall contain as much information as possible in order for persons other than the technician or his supervisor to reasonably determine the fault, when it was worked on, the corrective action and any other information pertaining to the individual Maintenance event, including replacement of parts.		
1090	All performance metrics shall be recorded and tracked through the MOMS and compliance to performance requirements shall be validated using MOMS reports.		
1091	It is the Contrator's responsibility to ensure that its Maintenance staff has real time access to the MOMS and that all the required connections are established and ongoing to ensure that the Maintenance staff has remote access. Maintenance staff shall be trained in the use of the MOMS.		
7.1	**Spare Parts**		
1092	Contrator shall be responsible for the inventory of all spare parts at an Approved storage facility(ies) and shall be insured in this regard as set forth in the Contract. The Contrator shall account for all spare parts and shall provide safeguards against theft, damage, or loss of the spare parts.		
1093	The Contrator shall ensure that only spare parts and equipment required to service the Cashless Tolling System and LAN communications spare equipment are stored at this facility and shall only be used for the PTC Cashless Tolling System.		
7.10.1	**Spare Parts Inventory Management**		
1094	The Contrator shall be responsible for the Maintenance of an adequate spare parts inventory. The Contrator is responsible for monitoring and identifying the existing spare parts inventory, ordering spare parts as required, and proposing the quantity needed to maintain the required performance.		
1095	The Contrator shall update and recommend a spare part quantity to be maintained in order to support the Cashless Tolling System functionality and operational readiness.		
1096	The Contrator shall hold the Commission harmless in the event spare parts or consumables are not available as a consequence of the Contrator's failure to purchase or replenish the spare parts or consumables Approved by the Commission.		
1097	During the term of this Agreement (including after the expiration of any applicable warranty periods) the Contrator shall be responsible for purchasing all miscellaneous repair items and consumable materials necessary to maintain the Cashless Tolling System at the performance levels specified in the Contract.		
7.10.2	**Spare Part Inventory and Tracking**		
1098	The Contrator shall be responsible for recording the inventory into the MOMS, monitoring the inventory quantity and ensuring that the inventory is maintained to the levels required.		
1099	The Contrator shall keep accurate records of all parts entering and leaving inventory including but not limited to: time and date part was dispensed, and the location within the Cashless Tolling System where the part was dispatched and used.		
1100	The Contrator shall also be responsible for tracking of all warranty replacement for Contrator provided Equipment through returned materials authorization (RMA) process. If the replaced part is under warranty, the part shall be immediately replaced with a new part. If the replaced part is out of warranty, the Contrator shall make every effort to repair the replaced item to a usable status and place the part back into spares inventory.		
1101	If the Contrator is unable to repair the part, a new part shall be purchased and placed into spares inventory. The details of the repair efforts, including problem; status; inventory, and repair disposition shall be included in the MOMS inventory and repair database.		

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7.10.3	**Procurement and Control of Spare Parts**		
1102	Thirty (30) days prior to placing the Cashless Tolling System in revenue collection the Contrator shall have purchased and have on hand at Commission facilities the agreed upon inventory of spare parts.		
1103	The spare parts shall be purchased on behalf of the Commission and shall be invoiced at the time of installation and owned by the Commission in a manner to ensure that the Commission receives the maximum benefit from any warranties associated with the spare parts. After the warranty period, the Commission shall reserve the right to purchase all spare parts directly from the source and all purchases will be coordinated through the Commission Procurement Office. After the Warranty period, Contrator provided spare parts not purchased directly by the Commission shall be provided at cost, shall not include any mark up and shall be in accordance with the agreed to Contract price. The Commission shall be under no obligation to buy back excess spare parts purchased by the Contrator.		
1104	The Contrator shall cooperate with and assist the Commission to ensure that all spare parts, equipment, and other Commission owned property is stored or otherwise located on the Contrator's property or in Contrator controlled space shall not be subject to any risk of being confiscated, claimed, attached, withheld by a landlord, creditor, or similar risk.		
1105	This cooperation includes, but is not be limited to, affixing appropriate labeling to track within MOMS and identify as the property of the Commission, with a Commission specific part or control number. All spare parts and consumables shall be maintained by the Contrator free and clear of any liens and encumbrances of any kind. The Commission shall have the right to inspect the spares and consumables inventory upon request.		
1106	The facility and storage area shall be secured and connected to an up-to-date security network system with alarm notification provided to the Contrator's Maintenance staff. Further, it is required that the Commission shall have full and unrestricted access to the Maintenance and or storage facility.		
1107	Any spare parts that are lost or damaged due to the negligence, intentional act, or omission of the Contrator or its employees, SubContrators, agents, or invitees shall be replaced by the Contrator at its sole cost. The Commission may elect to assume responsibility at any time for storage of spare parts, and the Contrator shall deliver all spare parts to the Commission for storage after receipt of reasonable notice from the Commission.		
7.11	**Repair Depot**		
1108	The Contrator shall be responsible for providing and staffing a repair depot for the return and repair of Cashless Tolling System components.		
1109	The Contrator shall be responsible for repairing failed Cashless Tolling System components and returning them to the spare parts inventory.		
1110	Failed components shall be tracked by the Contrator utilizing MOMS, including final resolution. Component tracking shall include but not limited to the following: receipt, repair date/information, replace reason, date of return.		
1111	The Contrator shall indicate the details of the repairs performed on any components. This shall include but not be limited to boards and connectors replaced.		
1112	If the replaced part is under Warranty, the part shall be immediately replaced with a new part by the Contrator. If the replaced part is out of Warranty, the Contrator shall make every effort to repair the replaced item to a usable status and place the part back into spares inventory. Except for pervasive defects, for out of Warranty components, the Contrator shall document why the component could not be repaired and advise the Commission that a new spare must be ordered.		
7.12	**Audits**		
1113	The Contrator shall completely support the Commission in any audit activity relating to the PTC's Cashless Tolling System or operations. In addition, the Contrator shall conduct audits in accordance with the Contrator's Quality Assurance Program. All deficiencies identified through the Audit process shall be successfully corrected by the Contrator. These audits may include, but are not limited to the following:		
	· internal control procedures;		
	· revenue/transaction reporting;		
	· financial audit and		
	· System processing and performance.		
	· Third party security evaluations		
7.13	**Security Certification**		
1114	The Contrator in coordination with the Commission shall perform monthly security tests that are scheduled in the MOMS, as well as every time a new Software release is deployed or new network equipment is added or replaced to evaluate the security risk to the Cashless Tolling System and identifying potential vulnerabilities. Commission IT Security shall be a party to these security tests and shall be notified in advance of any scheduled tests.		
1115	The Contrator is responsible for correcting all Cashless Tolling System security deficiencies at the Contrator's cost and ensuring there are no security risks.		
7.14	**Cooperation with Other Vendors and Providers**		

Functional Requirements - Addendum #1			
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1116	The Contrator shall cooperate to the fullest extent with other Contrators and third-party vendors in order to ensure that the lane and Cashless Tolling System operation and Maintenance do not conflict with or cause any deterrent in capability or service to the traveling public, customers, or the Commission.		
7.15	**Emergency Response Management**		
	The Commission has an emergency response management plan and the Contrator shall follow the procedures set forth in this plan when an emergency situation is invoked.		
1117	The Contrator shall immediately respond to any emergency situation, as notified by the Commission or otherwise, that may arise that has already or could potentially damage the Cashless Tolling System. The Contrator shall be prepared to put forth all necessary resources to divert or correct an emergency condition.		
1118	Such emergency conditions shall be handled in accordance with the policies and procedures established by the Commission. The following are a few examples of emergency conditions:		
	· weather related;		
	· vehicle accident;		
	· conditions that invoke the Disaster Recovery Plan;		
	· third party (power outage or communication failure);		
	· vandalism that causes parts of the Cashless Tolling System to be inoperable and		
	· detection of security breaches, discovered vulnerabilities and activities that pose a security threat to the Commission's toll collection system;		
7.16	**Cashless Toll Host Disaster Recovery**		
1119	The Contrator shall perform Disaster Recovery procedures in accordance with the Approved Disaster Recovery Plan (DRP) in the event of a disaster and return the Cashless Toll Host System to a fully operational condition.		
1120	The Contrator shall test the Disaster Recovery procedures on a yearly basis to validate that they are functioning per the Design. The Commission shall witness the test and the Contrator shall provide a report outlining the test, test results and any anomalies encountered for the Commission's review and Approval.		
1121	The Contrator shall address any issues encountered from the yearly Disaster Recovery testing.		
7.17	**Incident and Revenue Loss Reporting**		
1122	The Contrator shall immediately notify the Commission of any incident or event whereby the potential or actual loss of revenue occurred or could potentially occur. The Contrator shall take immediate action to rectify the condition and return the Cashless Tolling System to normal functioning.		
1123	A Monthly Incident Report shall be provided by the Contrator that includes a breakdown of lost electronic data and revenue by the Commission for each incident. If the condition is determined to be due to the fault of the Contrator, damages shall be assessed in accordance with the terms of the Contract.		
7.18	**Maintenance Staffing, Materials and Training**		
7.18.1	**Maintenance Staffing Requirements**		
1124	The Contrator shall be responsible for maintaining an adequate level of technical staff to perform Maintenance and Software Support Services on the Cashless Tolling System. The Contrator shall ensure that sufficient staffing is available to cover all Maintenance activities identified in this Scope of Work at all times but particularly during the following periods:		
	· Weekends;		
	· Holidays;		
	· personnel on vacation/sick time;		
	· after regular scheduled Work hours (on call), and		
	· unexpected emergency or crisis.		
	The Contrator shall provide personnel to perform the following functions. It shall be the Contrator's responsibility to staff at appropriate levels to meet the requirements, using the Maintenance Plan as the guideline for staffing levels and full job descriptions:		
	· Management: Contrator's Maintenance Management responsibilities include all Maintenance Management business dealings with the Contrator's Project Manager. Responsibilities include single point of contact for all Work related issues, including System problems, material issues, or Contrator personnel issues. Maintenance Management responsibilities also include ensuring that Systems are properly functioning and that the Maintenance and repair Work are properly performed and documented.		
	· Field Supervision: The Field Supervisory functions include being responsible for the day to day operations of the technicians, ensuring that all required Work is accomplished properly and efficiently.		
	· Maintenance Technical Staff: Responsibilities include responding to Maintenance activities and Alerts and for field level preventive Maintenance. Maintenance technicians shall be qualified and maintain the proper certifications to troubleshoot Maintenance problems and identify the source of the problem.		
	· Network Engineering: Network Administration shall include the configuration and Maintenance of the network systems and communications network.		

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1125	· Database Administration: Database administration shall include management of the servers and databases in accordance with Attachment 12 - Database Standards for the Pennsylvania Turnpike Commission. The database administration shall cover all aspects of the System database and ensuring the database is optimized for peak performance. The responsibilities include the configuration and operation of the System database and generation of database queries as requested by the Commission and other support personnel.		
	· Systems Engineering: Responsibilities include the configuration and monitoring of all System processing and verify that all operations and processes are occurring as scheduled. All MOMS alarms relating to process failures shall be investigated and resolved by the System engineering staff. Systems engineering responsibilities also include ensuring the proper configuration of all servers and coordinating all server Maintenance. System engineering responsibilities also include identifying issues, communicating with the System Software personnel and coordinating resolution of the problem. All user-related problems (application Software) shall also be handled by the System engineering personnel.		
	· Software Technical Staff: Responsibilities include responding to Maintenance activities and Alerts and resolution of Software problems. Software technical staff shall be qualified to troubleshoot Maintenance problems, identify the source of the problem and correct the problem.		
	· Administrative Staff: Responsibilities include support of the Contrator's Maintenance organization for the performance of Maintenance functions and to provide adequate phone and administrative support at the Maintenance management facility.		
	· ECO Management: Responsibilities include managing the ECO process between the Contrator and the Commission. ECO management staff will ensure all the proper forms are filled out and proper authorizations are obtained to perform the change order work.		
	· Documentation Staff: Responsibilities include updating and maintaining the documentation library to ensure all Cashless Tolling project documentation required in this Scope of Work is current and up to date.		
7.18.2	**Tools and Materials**		
1126	The Contrator shall provide all test Equipment and tools and support; including but not limited monitoring tools; smart phones; laptops, and any other items required for the Maintenance and Software Support staff to perform their Maintenance activities. All such devices shall have adequate and up-to-date security Software and be Approved by Commission IT before they are used on the Cashless Tolling System network. All required test Equipment, tools and Software tools shall be on site (as required) and in adequate supply, with all required personnel trained on their use. All test Equipment shall be standard units that are capable of achieving the measurement they are intended to make.		
7.18.3	**Training Program**		
1127	The Contrator shall ensure that Maintenance and Software services staff is properly trained for requirements of maintaining the System. The Contrator shall provide a minimum of two (2) weeks of classroom and On the Job Training (OJT) to all personnel in their respective area of responsibility before such personnel are assigned Maintenance duties.		
1128	The Contrator shall provide trained qualified technical staff to support the Maintenance and Software Support Services described in the Scope of Work. It is the Contrator's sole responsibility to develop training necessary to successfully perform all of the Maintenance actions required to keep the System operational.		
1129	The Contrator shall complete all required training and certifications prior to performing actual Maintenance and Software Support Services within a revenue collection environment. In the event changes or modifications are made to the System Equipment or configuration, supplemental training shall be accomplished prior to the actual service date for the changes or modifications.		
1130	Training shall include the Contrator's safety standards and guidelines and applicable Commission policies and procedures.		
1131	The Contrator shall provide documentation that this initial training has been successfully completed.		
1132	Various training programs the Contrator shall institute shall include, but not be limited to, the following:		
	· a thorough understanding and operating knowledge of the MOMS is required of all Maintenance personnel;		
	· an in depth understanding of the Cashless Tolling System and operations, including all Equipment, Software, interfaces, file transfers and interconnections;		
	· use of Maintenance documentation such as Maintenance manuals; drawings; vendor manuals, and parts list;		
	· functions of the System monitoring tools used to manage the System monitoring tasks;		
	· preventive Maintenance of all Systems and sub-systems;		
	· troubleshooting; diagnostics; repair, testing, and Maintenance follow up;		
	· System logs, errors logs and processing of exceptions;		
	· System dataflow and workflow queues;		
	· review of the Dashboard data and analysis;		
	· discussion on the areas of responsibility;		
	· special use Maintenance and monitoring tools;		
	· queries and reports, and		

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	· System access and security.		
1133	All System Maintenance and Software support personnel shall attend the appropriate training sessions. The Commission staff shall be notified of and invited to attend any or all training sessions two (2) weeks in advance of the training.		
1134	All System Maintenance and Software support personnel shall be trained on scheduling, work assignments, escalation process, transportation requirements and communications;		
1135	The Contrator shall provide training offered by vendors and original equipment manufacturer (OEM) for System components where available and required to properly operate, maintain, test and repair such Equipment and Software. Such training shall include but not be limited to:		
	· LPICPS Equipment;		
	· AVI Equipment;		
	· AVC System;		
	· DVAS;		
	· MOMS;		
	· network components and Software provided by the Contrator;		
	· security Software and security tests;		
	· databases and		
	· servers.		
7.18.4	**Training Materials and Ongoing Education**		
1136	Training material shall consist of Maintenance manuals, vendor manuals and any other documentation that provides for the efficient and effective Maintenance of the System and its components.		
1137	The Contrator shall hold regular meetings with Commission technical personnel to update Maintenance procedures, bring proposed System changes to the attention of the technical staff and discuss Maintenance issues identified in the field. The Contrator shall provide the Commission with the meeting schedule so that the appropriate Commission staff can attend these meetings.		
1138	The Commission shall have the right to make recordings and copies of all training program materials. The Contrator shall provide releases from all employees/Contrators to allow unlimited, royalty free use and copies of recordings.		
7.18.5	**System Documentation**		
1139	The Contrator shall have appropriate System documentation available to all Maintenance and Software Support personnel as required to perform their respective duties.		
1140	The Contrator shall make immediate updates to the online System documentation library to reflect any changes to the System Approved by the Commission. A version update sheet shall be included with the System documentation, and the documentation on file shall have the most recent version from the configuration management database. A complete submission of the System documentation shall be made every five (5) years that reflects all Approved changes to-date.		
7.18.6	**Training Records**		
1141	The Contrator shall keep accurate training records on all Contrator and Commission personnel. The Commission shall be permitted to audit personnel qualifications and training records at any time. Evidence of completion of training by Contrator and Commission personnel involved with system maintenance shall be provided to the Commission upon request.		
7.19	**Safety**		
1142	The Contrator shall adhere to all applicable safety standards and guidelines for working on or around energized Equipment and in a Maintenance environment, including but not limited to the following:		
	· the Commission safety procedures and guidelines are on the Commission website: https://www.paturnpike.com/business/engineering_standards.aspx;		
	· State of Pennsylvania safety procedures and guidelines;		
	· OSHA (Occupational Safety and Health Administration);		
	· NEMA (National Electrical Manufacturers Association);		
	· NEC (National Electrical Code);		
	· FHWA (Federal Highway Administration), and		
	· any other local, state, or Federal ordinance, procedure, or guideline that provides for a safe operation and working environment.		
7.20	**Maintenance and Protection of Traffic (MPT)**		
1143	The Contrator shall perform maintenance and protection of traffic associated with the Cashless Tolling Maintenance Phase. The Contrator in conjunction with the Commission shall develop as a part of the Maintenance Plan an MPT procedure in accordance with standards on the Commission website: https://www.paturnpike.com/business/engineering_standards.aspx for Approval by the Commission.		

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1144	The Contrator shall adhere to the Approved MPT Plan when setting up, working under MPT and restoring lanes to traffic. The Contrator shall also work with the Commission to coordinate MPT Work and to adhere to the Commission advance notice requirements for Work in the lanes, both on a scheduled and emergency basis. All lane closures shall also be coordinated with the Commission Traffic Operations Center and public relations.		
7.21	**Maintenance and Software Support Records**		
1145	The Commission shall have access to all Maintenance and service records at any time for review and audit, upon reasonable notice. The Contrator shall provide monthly reports generated in the System that permits the Commission to evaluate Contrator's Maintenance performance.		
1146	The Contrator's Maintenance manager shall maintain current, complete and accurate records for all Maintenance and Software Support Services activities. The Contrator's Maintenance manager shall institute procedures that make sure Maintenance staff enters complete information into the MOMS before closing a work order or trouble ticket.		
1147	All preventive and predictive Maintenance activities shall be reported in the same manner as corrective or emergency Maintenance activities by the Contrator. The information shall be contained on the MOMS and shall be made available through various MOMS reports.		
7.21.1	**Maintenance Summary Reports**		
1148	The Contrator shall provide the Maintenance summary reports to the Commission on a monthly basis in advance of the Monthly Meeting. The format of the Monthly reports shall be Approved by the Commission and included in the Maintenance Plan.		
1149	The Contrator shall provide an annual Executive Summary report to the Commission that summarizes the Contrator's performance for the Maintenance Year. The format of the Executive Summary reports shall be Approved by the Commission and included in the Maintenance Plan.		
1150	Maintenance summary reports shall also be readily available in detail or summary format to the Commission applicable personnel via the network on a daily, weekly, or other time period basis determined by the Commission. The Maintenance summary report shall include but not be limited to:		
	· a summary of the Contrator's performance for the month under review noting all accomplishments and deficiencies;		
	· all Maintenance and System performance reports that show Contrator's compliance to Maintenance performance requirements;		
	· detailed listing of failures and the impacted subsystems where Contrator's and System performance for the month were not in compliance with the performance requirements;		
	· any exceptions the Contrator believes are non-chargeable failures that Contrator is not responsible for;		
	· detailed list of parts replaced as a result of Maintenance actions, with an identification of warranty versus non-warranty replacement;		
	· status of removed parts and Equipment with an aging status for parts under repair or replacement (serial numbers, being repaired in Maintenance shop, purchase replacement part);		
	· trend analysis for repetitive failure;		
	· status of spare parts inventory;		
	· staffing report detailing positions and staff hours worked;		
	· staff performance trends;		
	· Software and firmware releases implemented;		
	· major Maintenance activities that occurred and are scheduled to occur;		
	· incidents that invoked emergency response or resulted in loss of toll revenue and		
	· summary of work order, Software defects and trouble tickets by priority and category.		
7.22	**Performance Requirements for the Cashless Tolling System and Liquidated Damages**		
	The Cashless Tolling System shall be designed, developed, tested, implemented and Maintained to meet the performance requirements specified herein without the need for manual intervention. The Contrator shall facilitate performance monitoring by reporting performance in clearly measurable terms. The Commission will conduct a review of the Contrator's performance on a monthly basis, as defined in the Maintenance Plan utilizing all required System reports provided by the Contrator and reports generated by the MOMS		
1151	The Contrator shall submit backup data that confirms Contrator compliance to Maintenance performance requirements.		
1152	A detailed listing of the Cashless Tolling System alarms for each subsystem shall be created with their priority levels in support of the performance data and Contrator's responsibility shall be clearly identified. The Contrator shall be responsible for all alarms and work orders that are escalated to the Contrator.		
1153	Monthly performance reviews shall begin at the commencement of the Maintenance and Software Support Services Contract at each tolling point and shall continue monthly through the period of the Maintenance and Software Support Services Contract. The first month's performance shall be reviewed in month two of the Maintenance and Software Support Services Contract.		

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1154	Liquidated damages associated with monthly performance reviews, if applicable, shall be assessed beginning in month two for month one performance and shall continue through the period of the Maintenance and Software Support Services Contract.		
7.22.1	**Acknowledgement of All Priority Events**		
1155	The Contrator shall acknowledge receipt of all Priority events within thirty (30) minutes of failure/event notification.		
1156	For the purposes of assessing Liquidated Damages, ninety five (95) percent of failure or priority event shall be acknowledged within thirty (30) minutes of receipt.		
1157	The Contrator may be assessed Liquidated Damages of $250 if the acknowledgment percent is below the ninety five (95) percent threshold every month for every Priority event not acknowledged within the time frame specified in these Requirements.		
7.22.2	**Time to Respond and Repair (TTRR)**		
1158	The Contrator shall respond to and complete repair of Priority 1 failures/events as follows:		
	· Level 2 failures: respond and complete repair within two (2) hours of failure/event notification.		
	· Level 3 failures: be onsite within twenty-four (24) hours of Approval to commence Work and once the Contrator is onsite, two (2) hour time to complete repair.		
	The Contrator may be assessed Liquidated Damages of $100 per occurrence for every additional delay of one (1) hour to respond and complete repair of Priority 1 failures/events.		
	The Contrator may be assessed Liquidated Damages of $500 per occurrence for every additional twenty-four (24) hour delay over the twenty-four (24) hours for being onsite and ready to commence Work.		
1159	The Contrator shall respond to and complete repair of Priority 2 failure/events as follows:		
	· Level 2 failures: respond and complete repair within four (4) hours of failure/event notification.		
	· Level 3 failures: be onsite within forty-eight (48) hours of Approval to commence Work and once the Contrator is onsite, two (2) hour time to complete repair.		
	The Contrator may be assessed Liquidated Damages of $100 per occurrence for every additional delay of one (1) hour to respond and complete repair of Priority 2 failures/events.		
	The Contrator may be assessed Liquidated Damages of $300 per occurrence for every additional twenty-four (24) hour delay over the forty-eight (48) hours for being onsite and ready to commence Work.		
1160	The Contrator shall respond to and complete repair of Priority 3 failures/events as follows:		
	· Level 2 failures: respond and complete repair within twenty-four (24) hours of failure/event notification.		
	· Level 3 failures: No longer than three (3) calendar days to respond and complete repair upon Approval to commence Work.		
	The Contrator is not subject to any Liquidated Damages for Priority 3 failures/events.		
7.22.3	**Mean Time Between Failures (MTBF)**		
1161	The Contrator shall meet MTBF requirements for the following elements of the Cashless Tolling System Components:		
	· Redundant Zone Controller: 30,000 hours		
	· Automatic Vehicle Identification (AVI) System: 20,000 hours		
	· Automatic Vehicle Classification (AVC) System: 30,000 hours		
	· License Plate Image Capture and Processing System (LPICPS): 30,000 hours		
	· Cashless Tolling Servers: 50,000 hours		
	· Network Devices: 50,000 hours		
1162	The reliability of the System components shall be calculated based on the following MTBF calculation: MTBF = # units x measuring period (hours)/ # chargeable failures		
1163	The Contrator may be assessed Liquidated Damages of $500 for each Sub-system not meeting requirement due to Contrator and Contrator System failure.		
7.22.4	**Availability**		
1164	The Contrator shall meet availability requirements for the following elements of the Cashless Tolling System:		
	· Lane Availability - Maintenance from Above or Below Toll Zones: 99.95%;		
	· Cashless Toll Host System – 99.95%;		
1165	Availability for each of the above systems shall be calculated as follows: Availability = 100% - [Total number of hours of downtime in time period X / Total hours in time period X].		
1166	For every month in which the Toll Zone lane is available less than the minimum requirement, Contrator may be subject to Liquidated Damages of:		
	· a 0.5% adjustment to the monthly Maintenance fee for availability of 99.90% and up to 99.94%;		
	· a 2% adjustment to the monthly Maintenance fee for availability of 99.50% and up to 99.89%;		
	· a 5% adjustment to the monthly Maintenance fee for availability of 99% and 99.49%.		
	· a 10% adjustment to the monthly Maintenance fee for availability below 99%.		
1167	For every month in which the Cashless Toll Host System is available less than the minimum requirement, Contrator may be subject to Liquidated Damages of:		
	· a 1% adjustment to the monthly Maintenance fee for availability of 99.90% and up to 99.94%;		

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	· a 2% adjustment to the monthly Maintenance fee for availability of 99.50% and up to 99.89%;		
	· a 5% adjustment to the monthly Maintenance fee for availability of 99% and 99.49%.		
	· a 10% adjustment to the monthly Maintenance fee for availability below 99%.		
7.22.5	**Transmission of TSL and VEL to the In-Lane Cashless Tolling System**		
1168	Successfully and accurately transmit the Comprehensive Home and Away/Interoperable TSL to each of the zone controllers within thirty (30) minutes of the Cashless Toll Host System receipt of the TSL.		
	The Contrator may be subject to Liquidated Damages of $500 per occurrence per one (1) hour delay for failure to successfully and accurately transmit the TSL to each of the zone controller.		
1169	Successfully and accurately transmit the VEL (if exercised) to the In-lane Cashless Tolling System within thirty (30) minutes of the Cashless Toll Host System receipt of the VEL (if exercised).		
1170	The Contrator is not subject to any Liquidated Damages.		
7.22.6	**Transmission of Toll Rate Tables and Schedules**		
1171	If toll rates are implemented in the lanes the when toll rate changes are scheduled, successfully and accurately transmit the toll rate tables and schedules to the zone controllers within twenty-four (24) hours prior to the effective date of the toll rate change.		
1172	When toll rate changes are scheduled, successfully and accurately transmit the toll rate tables and schedules to the existing CSC/VPC system within twenty-four (24) hours prior to the effective date of the toll rate change.		
1173	The Contrator may be subject to Liquidated Damages of $500 per occurrence per twenty-four (24) hour delay per System not receiving the data.		
7.22.7	**Transaction Processing and Transmission Requirements**		
1174	One hundred (100) percent of transactions (AVI and video transactions) from the roadway systems shall be obtained and reconciled by the Cashless Toll Host System with an accuracy of one hundred (100) percent.		
1175	One hundred (100) percent of transactions (AVI and video transactions) identified to be pursuable and non-pursuable shall be successfully and accurately transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent within twenty-four (24) hours of vehicle transit.		
1176	For failure to accurately process and reconcile one hundred (100) percent of all transactions and successfully and accurately transmit pursuable and non-pursuable transactions to the existing CSC/VPC system within twenty-four (24) hours of vehicle transit, the Contrator shall be subject to Liquidated Damages of $50 per twenty-four (24) hour delay per 1,000 transactions.		
7.22.8	**Image Processing Requirements**		
1177	One hundred (100) percent of images (video) from the roadway systems shall be successfully and accurately transmitted to the existing CSC/VPC system and reconciled to the transactions with an accuracy of one hundred (100) percent.		
1178	One hundred (100) percent of images identified to be pursuable shall be successfully and accurately transmitted to the existing CSC/VPC system with an accuracy of one hundred (100) percent within twenty-four (24) hours of vehicle transit.		
1179	For failure to accurately process and reconcile one hundred (100) percent of all images and successfully and accurately transmit pursuable images to the existing CSC/VPC system within twenty-four (24) hours of vehicle transit, the Contrator shall be subject to Liquidated Damages $50 per twenty-four (24) hour delay per 1,000 images set.		
7.22.9	**License Plate Extraction Accuracy - if the option to implement OCR/ALPR is exercised**		
1180	The Contrator shall provide an accurate OCR/ALPR process which shall result in the Cashless Tolling System extracting the license plate, plate type, and jurisdiction with an accuracy of at least 99.95 percent on minimum seventy (70) percent of video transactions generated in the lanes.		
1181	For error rates above the 0.05 percent rate, the Contrator may be subject to Liquidated Damages of $10 for each license plate in error.		
7.22.10	**Spare Parts Availability**		
1182	The Contrator shall maintain the required physical inventory of agreed to spare parts in accordance with the Contract.		
1183	For failure to maintain spare parts inventory at adequate levels for the month, the Contrator may be subject to Liquidated Damages of $500 per month for each failure to maintain spare parts inventory per the counts required.		
7.22.11	**Preventive Maintenance**		
1184	The Contrator shall perform preventive Maintenance on the Cashless Tolling System according to Approved Preventive Maintenance schedule.		
1185	The Contrator is not subject to any Liquidated Damages for this Maintenance Work.		
7.23	**Security**		
1186	All Contrator personnel shall be subject to appropriate security and background checks to the satisfaction of the Commission. The Contrator shall obtain written Approval from the Commission for all service personnel and each Contrator personnel shall be required to sign an acceptable use agreement.		

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1187	Contrator's personnel shall be issued Commission identification badges and shall wear such identification badges at all times when on the Commission property. Use of such identification badges for purposes other than work associated with the Contract will result in termination of the employee from the Contract and possible other legal or disciplinary action.		
1188	The services and Work performed under the Contract are considered highly confidential and the Contrator personnel shall at all times comply with applicable current computer and data industry standards with regard to data and information security. All employees of the Contrator shall not discuss their work with unauthorized personnel or any individuals not directly associated with the Commission.		
1189	Contrator's personnel can only use Commission -assigned workstations, servers, and laptops to communicate with the Cashless Tolling System while on Commission premises.		
1190	The Commission will identify and designate a primary point of contact for the Contrator. Under most circumstances, the Contrator will limit communication with Commission authorized staff and to the Commission's designated point of contact unless otherwise directed by the Commission.		
1191	Discussion by the Contrator of any Services or Work performed under the Contract with the media, in oral presentations, in written publications, or in any other form, not related to this Contract shall be Approved in advance by the Commission.		
7.24	**Confidentiality**		
1192	The Contrator shall keep all information regarding its activities pursuant to this Contract confidential and will communicate such information only with authorized Commission personnel or designated representatives.		

Sheet 1
PTC Cashless Tolling System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

	Base Contract Cost ($)	Optional Future Facilities Cost ($)	Grand Total Cost ($)
Implementation Phase			
In-lane System Cost (Sheet 2/Sheet 6)	$ -	$ -	$ -
Toll Host/System Cost (Sheet 3/Sheet 6)	$ -	$ -	$ -
Total Implementation Phase	$ -	$ -	$ -
Maintenance Phase			
In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Maintenance Phase	$ -	$ -	$ -
Optional Functionality			
In-lane OCR/ALPR and Enforcement Notification Pricing (Sheet 2/Sheet 6)	$ -	$ -	$ -
Total Optional Functionality	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY	$ -	$ -	$ -
Optional Extension Phase			
Extension #1 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #1 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Extension #2 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #2 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Optional Extension Phases	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL EXTENSION PHASES	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY AND OPTIONAL EXTENSION PHASES	$ -	$ -	$ -

Grand Total Dollars

Officer Signature

Date

Typed Name, Title, Address and Phone Number

Sheet 2
Base and Optional In-lane System Cost by Roadway
(Summary Only - No Proposer Input Required)

Highway	Planned Go-Live Date	Toll Zone Type	Total # of Toll Zones	Cost Per Toll Zone ($)	Total Cost Toll Zones ($)
Base Contract					
Findlay Connector	Q1 2018	Location TBD	2	$ -	$ -
		Facility Server			$ -
Southern Beltway	Q4 2019	Location TBD	4	$ -	$ -
Total Base Contract			6		$ -
Optional OCR/ALPR and Enforcement Notification					
Findlay Connector	Q1 2018				$ -
Southern Beltway	Q4 2019				$ -
Total Optional OCR/ALPR and Enforcement Notification					$ -

Sheet 3
Toll Host/System Cost
(Summary Only - No Proposer Input Required)

Item #	Description	Unit	Total Cost ($)
1	System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered	LS	$ -
2	Communications Equipment	LS	$ -
3	Zone Controller Software Costs	LS	$ -
4	Software (GUI, Back-end), Host System, MOMS, DVAS and License	LS	$ -
5	Design Documentation	LS	$ -
6	User, Maintenance, and Project Documentation	LS	$ -
7	Training (manuals, materials and delivery)	LS	$ -
8	Factory Acceptance Test	LS	$ -
9	On-Site First Installation Test	LS	$ -
10	Installation and Commissioning Test	LS	$ -
11	System Operational and Acceptance Test	LS	$ -
12	Third Party Warranty and Licenses	LS	$ -
13	Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services	LS	$ -
14	Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services	LS	$ -
15	Spare Parts and Equipment Year 1 - Warranty Year	LS	$ -
16	Insurance and Bonding	LS	$ -
17	Project Management	LS	$ -
18	Engineering and Design	LS	$ -
19	Transition Costs	LS	$ -
	Total Toll Host/System Costs		$ -

Sheet 4
Base and Optional
In-Lane System Hardware Maintenance and Software Support Services Cost
(Summary Only - No Proposer Input Required)

Item #	Description of Items	Total Annual Cost ($)	
	Base Contract Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	See Note #1
2	Year 2 of Maintenance	$ -	
3	Year 3 of Maintenance	$ -	
4	Year 4 of Maintenance	$ -	
5	Year 5 of Maintenance	$ -	
6	Year 6 of Maintenance	$ -	
7	Year 7 of Maintenance	$ -	
8	Year 8 of Maintenance	$ -	
9	Year 9 of Maintenance	$ -	
	Total In-Lane System Hardware Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2 - 9)	$ -	
	Optional Extension 1 Costs		
10	Extension 1 - Year 1 of Maintenance	$ -	
11	Extension 1 - Year 2 of Maintenance	$ -	
12	Extension 1 - Year 3 of Maintenance	$ -	
13	Extension 1 - Year 4 of Maintenance	$ -	
14	Extension 1 - Year 5 of Maintenance	$ -	
	Total Extension 1 Cost	$ -	
	Optional Extension 2 Costs		
15	Extension 2 - Year 1 of Maintenance	$ -	
16	Extension 2 - Year 2 of Maintenance	$ -	
17	Extension 2 - Year 3 of Maintenance	$ -	
18	Extension 2 - Year 4 of Maintenance	$ -	
19	Extension 2 - Year 5 of Maintenance	$ -	
	Total Extension 2 Cost	$ -	
Total Base and Optional In-Lane System Hardware Maintenance and Software Support Services (excluding Warranty)		$ -	

Note 1: Year 1 of Maintenance Total carried forward to Sheet 3 - In-Lane System Hardware Maintenance and Software Support Services. Not included in the total of Sheet 4.

Sheet 5
Base and Optional
Toll Host/System Maintenance and Software Support Services Cost
(Summary Only - No Proposer Input Required)

Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)	
	Base Contract Maintenance Costs			
1	Year 1 of Maintenance (Warranty)	$ -	$ -	See Note #1
2	Year 2 of Maintenance	$ -	$ -	
3	Year 3 of Maintenance	$ -	$ -	
4	Year 4 of Maintenance	$ -	$ -	
5	Year 5 of Maintenance	$ -	$ -	
6	Year 6 of Maintenance	$ -	$ -	
7	Year 7 of Maintenance	$ -	$ -	
8	Year 8 of Maintenance	$ -	$ -	
9	Year 9 of Maintenance	$ -	$ -	
	Total Toll Host/System Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2-9)		$ -	
	Optional Extension 1 Costs			
10	Extension 1 - Year 1 of Maintenance	$ -	$ -	
11	Extension 1 - Year 2 of Maintenance	$ -	$ -	
12	Extension 1 - Year 3 of Maintenance	$ -	$ -	
13	Extension 1 - Year 4 of Maintenance	$ -	$ -	
14	Extension 1 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 1 Cost		$ -	
	Optional Extension 2 Costs			
15	Extension 2 - Year 1 of Maintenance	$ -	$ -	
16	Extension 2 - Year 2 of Maintenance	$ -	$ -	
17	Extension 2 - Year 3 of Maintenance	$ -	$ -	
18	Extension 2 - Year 4 of Maintenance	$ -	$ -	
19	Extension 2 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 2 Cost		$ -	
Total Base and Optional Toll Host/System Maintenance and Software Support Services (excluding Warranty)			$ -	

Note 1: Year One of Maintenance Total carried forward to Sheet 3 - Toll Host/System Maintenance and Software Support Services. Not included in the total of Sheet 5.

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future System Implementation Cost		
Item #	Description of Items	Total Annual Cost ($)
	Future In-Lane System Cost (by Zone Type)	
1	Zone Type 1 (3+1+1)	$ -
2	Zone Type 2 (3+2+0)	$ -
3	Zone Type 3 (2+1+1)	$ -
4	Zone Type 4 (2+2+0)	$ -
5	Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -
6	Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -
7	Host Cost	$ -
8	Facility Server	$ -
9	Optional OCR/ALPR and Enforcement Notification	$ -
	Total Future System Implementation Cost	$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future In-Lane System Hardware Maintenance and Software Support Services Cost Summary		
Item #	Description of Items	Total Annual Cost ($)
	Maintenance Costs	
1	Year 1 of Maintenance (Warranty)	$ -
2	Year 2 of Maintenance	$ -
3	Year 3 of Maintenance	$ -
4	Year 4 of Maintenance	$ -
5	Year 5 of Maintenance	$ -
6	Year 6 of Maintenance	$ -
	Total Future In-Lane System Hardware Maintenance and Software Support Services Cost (Maintenance Years 1 - 6)	$ -
	Optional Extension 1 Costs	
7	Extension 1 - Year 1 of Maintenance	$ -
8	Extension 1 - Year 2 of Maintenance	$ -
9	Extension 1 - Year 3 of Maintenance	$ -
10	Extension 1 - Year 4 of Maintenance	$ -
11	Extension 1 - Year 5 of Maintenance	$ -
	Total Extension 1 Cost	$ -
	Optional Extension 2 Costs	
12	Extension 2 - Year 1 of Maintenance	$ -
13	Extension 2 - Year 2 of Maintenance	$ -
14	Extension 2 - Year 3 of Maintenance	$ -
15	Extension 2 - Year 4 of Maintenance	$ -
16	Extension 2 - Year 5 of Maintenance	$ -
	Total Extension 2 Cost	$ -
Total Future In-Lane System Hardware Maintenance and Software Support Services		$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future Toll Host/System Maintenance and Software Support Services Cost Summary			
Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)
	Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	$ -
2	Year 2 of Maintenance	$ -	$ -
3	Year 3 of Maintenance	$ -	$ -
4	Year 4 of Maintenance	$ -	$ -
5	Year 5 of Maintenance	$ -	$ -
6	Year 6 of Maintenance	$ -	$ -
	Total Future Toll Host/System Maintenance and Software Support Services Cost (Maintenance Years 1-6)		$ -
	Optional Extension 1 Costs		
7	Extension 1 - Year 1 of Maintenance	$ -	$ -
8	Extension 1 - Year 2 of Maintenance	$ -	$ -
9	Extension 1 - Year 3 of Maintenance	$ -	$ -
10	Extension 1 - Year 4 of Maintenance	$ -	$ -
11	Extension 1 - Year 5 of Maintenance	$ -	$ -
	Total Extension 1 Cost		$ -
	Optional Extension 2 Costs		
12	Extension 2 - Year 1 of Maintenance	$ -	$ -
13	Extension 2 - Year 2 of Maintenance	$ -	$ -
14	Extension 2 - Year 3 of Maintenance	$ -	$ -
15	Extension 2 - Year 4 of Maintenance	$ -	$ -
16	Extension 2 - Year 5 of Maintenance	$ -	$ -
	Total Extension 2 Cost		$ -
	Total Future Toll Host/System Maintenance and Software Support Services		$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Zone Type 5 (2+1+1) Space Frame with Maint Below					
1. Redundant Toll Zone Controller and In-lane Electronics[1]					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -	$ -	$ -
2. AVI System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVI System			$ -	$ -	$ -
3. AVC System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVC System			$ -	$ -	$ -
4. LPICPS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total LPICPS			$ -	$ -	$ -
5. Communications Equipment					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
6. Equipment Racks					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Equipment Racks			$ -	$ -	$ -
7. DVAS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total DVAS			$ -	$ -	$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
8. Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Commissioning Test			$ -	$ -	$ -
Total			$ -	$ -	$ -
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Facility Server			$ -	$ -	$ -
Total with Facility Server			$ -	$ -	$ -
Labor Check (from Sheet 2-2, cell F50) should equal cell E77				$ -	
Optional OCR/ALPR and Enforcement Notification Findlay Connector					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification Southern Beltway					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -

Note 1: All hardware/software provided under this Contract should be included in these costs.
Note 2: Use the additional rows as needed to itemize each components
Note 3: All roadways are current Year Cost.
Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.
Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work
Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 2-2 Back-up
In-Lane System - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			In-Lane Cost		
			Rate	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
1 System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered					
Host Servers - equipment, purchase, install, configure and test	0	$ -	$ -	$ -	$ -
Storage Works	0	$ -	$ -	$ -	$ -
Back-up Library	0	$ -	$ -	$ -	$ -
Other Third-party Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Hardware, Third Party SW and Installation not Otherwise Covered			$ -	$ -	$ -
2 Communications Equipment					
Switches	0	$ -	$ -	$ -	$ -
LAN HW	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
3 Zone Controller Software Costs					
Zone Controller Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Zone Controller Software Costs			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
4 Software (GUI, Back-end), Host System, MOMS, DVAS and License					
Host Software	0	$ -	$ -	$ -	$ -
MOMS	0	$ -	$ -	$ -	$ -
DVAS	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Software (GUI, Back-end), Host System, MOMS, DVAS and License			$ -	$ -	$ -
5 Design Documentation					
Lane Drawings	0	$ -	$ -	$ -	$ -
SDDD	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Design Documentation			$ -	$ -	$ -
6 User, Maintenance, and Project Documentation					
Documents/Manuals	0	$ -	$ -	$ -	$ -
Maintenance Manual	0	$ -	$ -	$ -	$ -
Installation Manual	0	$ -	$ -	$ -	$ -
Project Plans	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total User, Maintenance and Project Documentation			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
7 Training (manuals, materials and delivery)					
Maintenance Training	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Training			$ -	$ -	$ -
8 Factory Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Factory Acceptance Test			$ -	$ -	$ -
9 On-Site First Installation Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total On-Site First Installation Test			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
10 Installation and Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Installation and Commissioning Test			$ -	$ -	$ -
11 System Operational and Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Operational and Acceptance Test			$ -	$ -	$ -
12 Third Party Warranty and Licenses					
DB Licenses	0	$ -	$ -	$ -	$ -
OS Licenses	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Third Party Warranty and Licenses			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
13 Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services					
Year 1 Warranty (from sheet 4)					$ -
Total Warranty First Year of Operation - In-Lane System Maintenance and Software Support Services					$ -
14 Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					
Year 1 Warranty (from sheet 5)					$ -
Total Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					$ -
15 Spare Parts and Equipment Year 1 - Warranty Year					
Spare Year 1 (From Sheet 3-2) In-Lane Spares					$ -
Spare Year 1 (From Sheet 3-2) Host System Spares					$ -
Total Spare Parts and Equipment Year 1 - Warranty Year					$ -
16 Insurance and Bonding					
Insurance and Bonding	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Insurance and Bonding			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
17 Project Management					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Project Management			$ -	$ -	$ -
18 Engineering and Design					
Lane Installation Design Drawings	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Engineering and Design			$ -	$ -	$ -
19 Transition Costs					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Transition Costs			$ -	$ -	$ -
Total Host/System Costs			$ -	$ -	$ -
Labor Check (from Sheet 3-3, cell F50) should equal cell F174				$ -	

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
In-Lane Spares (All Roadways)	Year 1 - Warranty Year		
1. Redundant Toll Zone Controller and In-lane Electronics[1]			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Serial Controllers	0	$ -	$ -
Power Supply	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -
2. AVI System			
AVI Reader Modules	0	$ -	$ -
AVI Antennas	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVI System			$ -
3. AVC System			
Primary AVDC Sensor	0	$ -	$ -
AVDC Detector Cards	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVC System			$ -
4. LPICPS			
Front Cameras	0	$ -	$ -
Rear Cameras	0	$ -	$ -
Illuminators	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total LPICPS			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
5. Communications Equipment			
Switches	0	$ -	$ -
Power Supply	0	$ -	$ -
Router	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
6. Equipment Racks			
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Equipment Racks			$ -
7. DVAS			
Cameras	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total DVAS			$ -
8. UPS			
Batteries	0	$ -	$ -
Power Supply	0	$ -	$ -
Inverter	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total UPS			$ -
Spare Cost Warranty Year (Year 1) In-Lane System			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
Toll Host/System Spares Cost	Year 1 - Warranty Year		
1. System Hardware			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Miscellaneous	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total System Hardware			$ -
2. Communications Equipment			
LAN Equipment	0	$ -	$ -
Power Supply	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
Spare Cost Warranty Year (Year 1) Toll Host/System			$ -
Total Spare Cost Warranty Year (Year 1) In-Lane and Toll Host/System			$ -

Sheet 3-3 Back-up
Toll Host/System -
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			Toll Host/System Costs		
			Rate	Hours	Total System Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs - Southern Beltway				
Total Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	2	12	$ -
Total Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	2	12	$ -
Total Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 6 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 7 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 8 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 9 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 4-2 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Year 7 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 7	$ -
Year 8 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 8	$ -
Year 9 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 9	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Year 8 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Year 8 Rate	Year 8 Hours	Year 8 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 9 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 9 Rate	Year 9 Hours	Year 9 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 7 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 7 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 8 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 8 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 9 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 9 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%	Escalation % (Over Previous Year)	3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance		LOADED HOURLY BILLING RATES Year 4 of Maintenance	
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Year 8 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Year 8 Rate	Year 8 Hours	Year 8 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 9 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 9 Rate	Year 9 Hours	Year 9 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 1 Quantity	Year 1 Unit Evaluation Cost including Labor	Year 1 Total Evaluation Cost	Year 2 Quantity	Year 2 Unit Evaluation Cost including Labor	Year 2 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						
Zone Type 2 (3+2+0)	$ -	$ -						
Zone Type 3 (2+1+1)	$ -	$ -						
Zone Type 4 (2+2+0)	$ -	$ -						
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						
Estimated Zones Ordered/Costs								
Estimated Zones Ordered/Costs Volume Discount								
Estimated Zones Ordered/Costs (less volume discount)								
Incremental Host Cost (based on zone quantity)								
Facility Server (if applicable)	$ -	$ -						
Estimated Incremental Host Cost and Facility Server Cost								
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -						
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 3 Quantity	Year 3 Unit Evaluation Cost including Labor	Year 3 Total Evaluation Cost	Year 4 Quantity	Year 4 Unit Evaluation Cost including Labor	Year 4 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -				14	$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -				6	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				4	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 5 Quantity	Year 5 Unit Evaluation Cost including Labor	Year 5 Total Evaluation Cost	Year 6 Quantity	Year 6 Unit Evaluation Cost including Labor	Year 6 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				8	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -				14	$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 7 Quantity	Year 7 Unit Evaluation Cost including Labor	Year 7 Total Evaluation Cost	Year 8 Quantity	Year 8 Unit Evaluation Cost including Labor	Year 8 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				20	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				6	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						28		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)								
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 9 Quantity	Year 9 Unit Evaluation Cost including Labor	Year 9 Total Evaluation Cost	Year 10 Quantity	Year 10 Unit Evaluation Cost including Labor	Year 10 Total Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost less discount by Zone Type
Zone Type 1 (3+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -	40	$ -	$ -				$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -	2	$ -	$ -				$ -	$ -
Estimated Zones Ordered/Costs			42		$ -				$ -	
Estimated Zones Ordered/Costs Volume Discount					$ -				$ -	
Estimated Zones Ordered/Costs (less volume discount)					$ -				$ -	
Incremental Host Cost (based on zone quantity)					$ -				$ -	
Facility Server (if applicable)	$ -	$ -	3	$ -	$ -				$ -	
Estimated Incremental Host Cost and Facility Server Cost					$ -				$ -	
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs					$ -				$ -	
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -		$ -	$ -				$ -	
Volume Discount by Zone Quantity:										
Volume Discount for 10- 19 Zones	0.00%									
Volume Discount for 20- 29 Zones	0.00%									
Volume Discount for 30- 39 Zones	0.00%									
Volume Discount for over 40 Zones	0.00%									

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
	2016 Values		
Zone Type 1 (3+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 2 (3+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 3 (2+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 4 (2+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
Zone Type 6 (3+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL UNIT ($)	LABOR ($)	TOTAL COST ($)
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Host Cost (if applicable) Lump Sum for First Year of Implementation			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Per Zone Cost (if applicable)			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -

Note 1: All costs are current Year Cost.

Note 2: All hardware/software provided under this Contract should be included in these costs.

Note 3: All roadways are current Year Cost.

Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.

Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work

Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			2016 Loaded Labor Rate	Zone Type 1 (3+1+1)		Zone Type 2 (3+2+0)	
				2016 Values		2016 Values	
				Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -	0	$ -
2		Project Manager	$ -	0	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	0	$ -
23		Software Architect	$ -	0	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	0	$ -
26		Software Lead	$ -	0	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	0	$ -
30		System Administrator	$ -	0	$ -	0	$ -
31		System Analyst	$ -	0	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	0	$ -
33			$ -	0	$ -	0	$ -
34			$ -	0	$ -	0	$ -
35			$ -	0	$ -	0	$ -
36			$ -	0	$ -	0	$ -
37			$ -	0	$ -	0	$ -
38			$ -	0	$ -	0	$ -
39			$ -	0	$ -	0	$ -
40			$ -	0	$ -	0	$ -
41			$ -	0	$ -	0	$ -
42			$ -	0	$ -	0	$ -
43			$ -	0	$ -	0	$ -
44			$ -	0	$ -	0	$ -
	Total Labor Cost				$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			Zone Type 3 (2+1+1)		Zone Type 4 (2+2+0)	
			2016 Values		2016 Values	
			Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	0	$ -	0	$ -
2		Project Manager	0	$ -	0	$ -
3		Technical /Software Development Manager	0	$ -	0	$ -
4		Lane Technical Lead	0	$ -	0	$ -
5		Installation Manager	0	$ -	0	$ -
6		Maintenance Manager	0	$ -	0	$ -
7		Quality Assurance/Test Manager	0	$ -	0	$ -
8		CADD Technician	0	$ -	0	$ -
9		Database Analyst	0	$ -	0	$ -
10		Deputy Project Manager	0	$ -	0	$ -
11		Electrician Helper	0	$ -	0	$ -
12		Hardware Engineer/Lead	0	$ -	0	$ -
13		Installation Supervisor	0	$ -	0	$ -
14		Installation Technician	0	$ -	0	$ -
15		Licensed Electrical Engineer	0	$ -	0	$ -
16		Licensed Electrician	0	$ -	0	$ -
17		Maintenance Manager	0	$ -	0	$ -
18		Maintenance Supervisor	0	$ -	0	$ -
19		Maintenance Technician	0	$ -	0	$ -
20		Network Administrator	0	$ -	0	$ -
21		Network Engineer	0	$ -	0	$ -
22		Senior Maintenance Technician	0	$ -	0	$ -
23		Software Architect	0	$ -	0	$ -
24		Software Development Engineer	0	$ -	0	$ -
25		Software Development Manager	0	$ -	0	$ -
26		Software Lead	0	$ -	0	$ -
27		Software Programmer I	0	$ -	0	$ -
28		Software Programmer II	0	$ -	0	$ -
29		Software Programmer III	0	$ -	0	$ -
30		System Administrator	0	$ -	0	$ -
31		System Analyst	0	$ -	0	$ -
32		Technical Writer	0	$ -	0	$ -
33			0	$ -	0	$ -
34			0	$ -	0	$ -
35			0	$ -	0	$ -
36			0	$ -	0	$ -
37			0	$ -	0	$ -
38			0	$ -	0	$ -
39			0	$ -	0	$ -
40			0	$ -	0	$ -
41			0	$ -	0	$ -
42			0	$ -	0	$ -
43			0	$ -	0	$ -
44			0	$ -	0	$ -
	Total Labor Cost			$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be ma
Maintenance Cost based on actual CPI change for the previous year as further describe
Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page v

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			Zone Type 5 (2+1+1) Space Frame with Maint Below		Zone Type 6 (3+1+1) Space Frame with Maint Below	
			2016 Values		2016 Values	
			Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	0	$ -	0	$ -
2		Project Manager	0	$ -	0	$ -
3		Technical /Software Development Manager	0	$ -	0	$ -
4		Lane Technical Lead	0	$ -	0	$ -
5		Installation Manager	0	$ -	0	$ -
6		Maintenance Manager	0	$ -	0	$ -
7		Quality Assurance/Test Manager	0	$ -	0	$ -
8		CADD Technician	0	$ -	0	$ -
9		Database Analyst	0	$ -	0	$ -
10		Deputy Project Manager	0	$ -	0	$ -
11		Electrician Helper	0	$ -	0	$ -
12		Hardware Engineer/Lead	0	$ -	0	$ -
13		Installation Supervisor	0	$ -	0	$ -
14		Installation Technician	0	$ -	0	$ -
15		Licensed Electrical Engineer	0	$ -	0	$ -
16		Licensed Electrician	0	$ -	0	$ -
17		Maintenance Manager	0	$ -	0	$ -
18		Maintenance Supervisor	0	$ -	0	$ -
19		Maintenance Technician	0	$ -	0	$ -
20		Network Administrator	0	$ -	0	$ -
21		Network Engineer	0	$ -	0	$ -
22		Senior Maintenance Technician	0	$ -	0	$ -
23		Software Architect	0	$ -	0	$ -
24		Software Development Engineer	0	$ -	0	$ -
25		Software Development Manager	0	$ -	0	$ -
26		Software Lead	0	$ -	0	$ -
27		Software Programmer I	0	$ -	0	$ -
28		Software Programmer II	0	$ -	0	$ -
29		Software Programmer III	0	$ -	0	$ -
30		System Administrator	0	$ -	0	$ -
31		System Analyst	0	$ -	0	$ -
32		Technical Writer	0	$ -	0	$ -
33			0	$ -	0	$ -
34			0	$ -	0	$ -
35			0	$ -	0	$ -
36			0	$ -	0	$ -
37			0	$ -	0	$ -
38			0	$ -	0	$ -
39			0	$ -	0	$ -
40			0	$ -	0	$ -
41			0	$ -	0	$ -
42			0	$ -	0	$ -
43			0	$ -	0	$ -
44			0	$ -	0	$ -
	Total Labor Cost			$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be ma
Maintenance Cost based on actual CPI change for the previous year as further describe
Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page v

Sheet 6-4 Back-up
Optional Incremental Host System Cost
(2016 Values)

DESCRIPTION OF ITEMS	PER ZONE COST ($)
Incremental Host System Cost Per Zone (1 - 9 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (1-9 Zones)	$ -
Incremental Host System Cost Per Zone (10 - 19 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (10-19 Zones)	$ -
Incremental Host System Cost Per Zone (20 - 29 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (20-29 Zones)	$ -
Incremental Host System Cost Per Zone (30 - 39 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (30-39 Zones)	$ -
Incremental Host System Cost Per Zone (40 or more Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (40 or more Zones)	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs				
Year 1 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 2 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 3 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 4 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 5 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	76	12	$ -
Year 6 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Future Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services -
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 7-1

Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
CADD Technician	$ -
Database Administrator	$ -
Database Analyst	$ -
Deputy Project Manager	$ -
Electrician Helper	$ -
Finance Manager (Design/Implementation)	$ -
Finance Manager (Operations)	$ -
Hardware Engineer/Lead	$ -
Host Technical Lead	$ -
Installation Manager	$ -
Installation Supervisor	$ -
Installation Technician	$ -
Lane Technical Lead	$ -
Licensed Electrical Engineer	$ -
Licensed Electrician	$ -
Maintenance Manager	$ -
Maintenance Supervisor	$ -
Maintenance Technician	$ -
Network Administrator	$ -
Network Engineer	$ -
Operations Manager	$ -
Project Manager	$ -
Project Principal	$ -
Quality Assurance/Test Manager	$ -
Senior Maintenance Technician	$ -
Software Architect	$ -
Software Development Engineer	$ -
Software Development Manager	$ -
Software Lead	$ -
Software Programmer I	$ -
Software Programmer II	$ -
Software Programmer III	$ -
System Administrator	$ -
System Analyst	$ -
Systems Engineer	$ -
Technical /Software Development Manager	$ -
Technical Writer	$ -
Training Manager	$ -

Sheet 7-1
Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -

Note 1: CPI adjustments will be made to the Cost based on actual CPI change for the previous year beginning with Operations Year 2 as further described in the Price Proposal Instructions.

Exhibit D - Payment Schedule

A. Payments for Implementation Cashless Tolling System Design and Development					$ -
Payment Number	**Payment Milestone**	**Pay Items**	**% Paid**	**Cum.% Paid**	
A-1	Notice to Proceed	Notice to Proceed.	5.00%	5.00%	$ -
A-2	Cashless Toll System Development and Administration	Project Management Documents Approved (PMP, Project Schedule, QA Plan and SDP, SRD).	10.00%	15.00%	$ -
A-3	Cashless Toll System Design	Business Rules and Design Documents Approved (BRD and SDDD) .	15.00%	30.00%	$ -
A-4	Cashless Toll System Factory Acceptance Testing (FAT)	Test Documentation and Factory Acceptance Testing Approved.	15.00%	45.00%	$ -
A-5	Cashless Toll System Onsite First Installation Testing (OFIT)	Installation Plan Approved, Test Documentation and Onsite Integration Testing Approved - First Site.	10.00%	55.00%	$ -
A-6	Cashless Toll System Manuals and Training	Manuals Approved and Training Approved.	5.00%	60.00%	$ -
A-7	Cashless Toll System Commissioning - Findlay Connector	Installation and Commissioning Approved Ready for Go Live.	5.00%	65.00%	$ -
A-8	Cashless Toll System Commissioning - Southern Beltway	Installation and Commissioning Approved Ready for Go Live.	10.00%	75.00%	$ -
A-9	Cashless Toll System Acceptance	Operational and Acceptance Test Approved, As-builts Approved and Implementation Phase Closed Out.	25.00%	100.00%	$ -

B. Payments Related to Hardware, Equipment and Off-the-Shelf Software				
Payment Number	**Payment Milestone**	**% Paid**	**Cum.% Paid**	
	Findlay Connector			**$ -**
B-1	Ordering Verified Findlay Connector	20.00%	20.00%	$ -
B-2	Purchased, Received and Verified Findlay Connector	60.00%	80.00%	$ -
B-3	Installation Approved Findlay Connector	20.00%	**100.00%**	$ -
	Southern Beltway			**$ -**
B-4	Ordering Verified Southern Beltway	20.00%	20.00%	$ -
B-5	Purchased, Received and Verified Southern Beltway	60.00%	80.00%	$ -
B-6	Installation Approved Southern Beltway	20.00%	**100.00%**	$ -

SIGN-IN SHEET

PREPROPOSAL CONFERENCE RFP #16-10495-7252

Cashless Tolling System Implementation and Maintenance

DATE: March 2, 2016

TIME: 1:00 PM

	COMPANY NAME	REP NAME	ADDRESS	PHONE	EMAIL
1	DRJTBC	Chip Stracciolini	110 Wood St., Monroeville, PA	(267) 790-1044	CStracciolini@drjtbc.org
2	PTC	Don Klingensmith	700 S. Eisenhower Blvd., Middletown PA 17057	717-831-7585	dklingen@paturnpike.com
3	PTC-IT	Rod Snyder	"	7412	rosnyder@paturnpike.com
4	PTC	Jill Shannon	"	7443	JShannon@paturnpike.com
5	PTC	Matt McConnell	"	7144	MMcconne@paturnpike.com
6	"	Keith Libengood	"	7172	wlibengo@Paturnpike.com
7	"	Keith Knorr	"	7568	KKnorr@paturnpike.com
8	Kapsch	Chris Body	8201 Greensboro Dr.	301 535 1863	Chris.body@kapsch.net
9	Momentum, Inc	Brad Wastler	2120 Market Str, Camp Hill PA	717-712-6457	bwastler@m-inc.com
10	HILL & SMITH, INC.	JOHN FEEMAN	987 BUCKEYE PARK RD. COLUMBUS, OHIO 43207	7172695375	JOHNF@HOTDIPGALV.COM
11	Q-FREE	CHRIS MELTON	103 Watson Rd. Chesapeake VA 23320	703-577-3675	Christopher.Melton@q-free.com
12	Sanef ITS	PAUL LEGHART	1600 Stewart Ave, Westbury NY 11590	516-592-6135	paul.leghart@sanef-its-america.com
13	XEROX	Gretchen Vreeland	3016 Ionoff Rd Htg PA 17110	717.920.1724	gretchen.vreeland@xerox.com
14	PERCEPTICS	JENNIFER SHERBLOM	11130 KINGSTON PIKE, FARRAGUT, TN 37934	508-723-3353	JENNIFER.SHERBLOM@PERCEPTICS.COM
15	PERCEPTICS	JOHN MIKE	11130 KINGSTON PIKE, FARRAGUT TN 37934	7173071092	JOHN.MIKE@PERCEPTICS.COM
16	Susan Graham Consulting	Al. Weiand	111 Cocoa Ave, Hershey, PA	717-766-7811	aweiand@susangconsulting.com

SIGN-IN SHEET

PREPROPOSAL CONFERENCE RFP #16-10495-7252

Cashless Tolling System Implementation and Maintenance

DATE: March 2, 2016

TIME: 1:00 PM

	COMPANY NAME	REP NAME	ADDRESS	PHONE	EMAIL
17	Susan Graham Consulting (Small Diverse Business)	Susan Graham	111 Cocoa Ave Hershey PA	(717) 533 4470	sgraham@susangconsulting.com
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Addendum No. 2

RFP # 15-10495-7252

Cashless Tolling System Implementation and Maintenance

Prospective Respondents: You are hereby notified of the following information in regard to the referenced RFP:

REVISIONS

1. Replace Table 2-1 within Section 2.2.1 on page 14 of 35 of the RFP (18 of 1050 in the original RFP PDF file) in its entirety with the following:

Proposal Sections to be Completed by a Proposer	**Page Count Limitations**
Proposal Cover Sheet	• No limitations
Proposal Executive Summary	• 2 to 5 pages
Proposal Section 1: Firm Qualifications	Limited to a combined total of 150 pages
Proposal Section 2: Key Team Qualifications	
Proposal Section 3: Approach to Scope of Work and Technical Requirements	
Proposal Section 4: Approach to Project Plan and Implementation	
Proposal Section 5: Approach to Maintenance	
Proposal Section 6: Adherence to the Scope of Work and Requirements Conformance Matrix	• No limitations
Proposal Section 7: Forms and Submittals	• No limitations
Price Proposal	• No limitations
Proposal Appendix 1: Product Cut Sheets	• No limitations
Proposal Appendix 2:Preliminary Bill of Materials and Sample Reports	• No limitations
Proposal Appendix 3: Audited Financial Statements	• No limitations
Proposal Appendix 4: Civil Infrastructure Package	• No limitations

2. Replace the first sentence of the first paragraph within section 11.2 Project Implementation schedule on page 14 of 46 of the Exhibit G – Draft Contract (974 of 1050 in the original RFP PDF file) in its entirety with the following:

Within fifteen (15) days of the Implementation Phase Notice to Proceed the CONTRACTOR shall submit a baseline Project Implementation Schedule in accordance with the requirements set forth in Section 5.1.7 of Exhibit A Scope of Work for baseline Approval.

3. Replace Section 29 Surety Bonds on page 34-35 of 46 of the Exhibit G – Draft Contract (994-995 of 1050 in the original RFP PDF file) in its entirety with the following:

When awarded the Contract, Contractor shall furnish a Performance Bond with sufficient surety or sureties, in an amount equal to 100% of the Contract Implementation Phase price. Have the bond specify that the contracted work will be completed in a manner satisfactory to the COMMISSION. Have the bond state that the COMMISSION is not liable for any expenses incurred through the failure to complete the work as specified, nor liable for any damages growing out of the carelessness of the Contractor, the Contractor's employees, or subcontractors. Also furnish a Payment Bond in the amount of 100% of the Contract Implementation Phase price. Have a corporate surety, legally authorized to transact business in the State and that have an A.M. Best's rating of no less than A-, with a financial size category of IX, or better, execute both bonds. If the COMMISSION decides the bond surety is unsatisfactory, promptly furnish any additional required security to protect the COMMISSION's interests and the interests of all persons, firms, or corporations who/which have furnished material, provided equipment on rental, or supplied/performed labor or services on, or in connection with, the performance of the work for this contract. For a joint venture bid, an authorized general partner or corporate officer of the lead joint venture will be responsible for proper execution of the bonds.

Upon commencement of the Contract Maintenance Phase, Contractor shall furnish a Performance Bond and a Payment Bond, with sufficient surety or sureties, in an amount calculated as the sum of Year 1 maintenance as identified in the Contractor's Price Proposal. For each year thereafter the Maintenance Bond shall be equal to the sum of the gross invoice amounts (prior to any deductions for Non-Compliance Payments) for the previous twelve (12) months.

Performance bond coverage shall be continuous and shall be required on all open base or option project as a part of the Contract that have not yet been Approved or closed-out. Once a project has been Approved as complete and is closed out the bond value may be reduced by the dollar amount of the bond associated with the close-out.

4. Replace part a) in Section 10.1.3 Final Acceptance of Implementation Phase on page 11 of 46 of the Exhibit G – Draft Contract (971 of 1050 in the original RFP PDF file) in its entirety with the following:

a) The CONTRACTOR shall provide a Final Acceptance letter certification to close out the Phase. The certification shall include but not be limited to: total costs associated with the Phase, date of Work completion and any additional information contained in items b) through h) below, if applicable:

5. Replace requirement #352 within section 2.2.3.3 Transaction Audit and Verification on page 48 of 171 of Exhibit A – Scope of Work (page 95 of 1050 in original RFP PDF file) in its entirety with the following:

The Cashless Tolling System shall have the capability to perform an independent audit that confirms all vehicles traveling through a toll zone are detected, as well as an automatic audit and verification process that confirms all vehicles traveling through the toll lane are reported as transactions; all transaction transmissions between the zone controller and Cashless Toll Host System are successful. The System shall have screens and reports to validate the audit trail.

6. Append the following sentence to requirement #324 within section 2.2.2.3 Archive and Purge Control Mechanisms on page 44 of 171 of Exhibit A – Scope of Work (page 91 of 1050 in original RFP PDF file):

Archive toll collection related data shall be retained for the life of the Contract with archived data transferred to the PTC at completion of the Contract. Details of archiving methods and handover process to be detailed in Design phase.

7. Replace the first sentence of requirement #566 within section 2.3 Test Site on page 71 of 171 of Exhibit A – Scope of Work (page 118 of 1050 in original RFP PDF file) in its entirety with the following:

The Contractor shall install and setup a dedicated test site at a Contractor Provided, Commission Approved facility that shall be available for testing software and hardware changes or upgrades for the term of the Contract.

8. Replace requirement #676 within section 4.10 Lane Closure and Traffic Control Requirements and Conditions on page 89 of 171 of Exhibit A – Scope of Work (page 89 of 1050 in original RFP PDF file) in its entirety with the following:

Any Work involving removal/relocation of Equipment (loosening or removal of nuts/screws, cables, connectors etc.) shall be done with appropriate lane closures in coordination with the latest PTC Traffic Department requirements.

9. Replace requirement #752 within section 5.3.1 System Requirements Review (SRR) on page 100 of 171 of Exhibit A – Scope of Work (page 158 of 1050 in original RFP PDF file) in its entirety with the following:

During the System requirements review phase the Contractor can also present the Contractor's standard product to the Commission, and use the feedback obtained in the presentation in the development of the Conformed Scope of Work and Requirements Document (CSWRD).

10. Replace requirement #1002 within section 7.1.1 Hardware/System Warranty Program on page 141 of 171 of Exhibit A – Scope of Work (page 188 of 1050 in original RFP PDF file) in its entirety with the following:

The Hardware Warranty period for all Equipment furnished under this Contract except server Hardware shall be for a period of one (1) year, commencing on the date of Commissioning Approval of each tolling location.

11. Append the following definition of Traffic Volume Projections to requirements #87, #125, and #304 on pages 17, 21 and 42 of 171 of Exhibit A – Scope of Work (page 64, 68 and 89 of 1050 in original RFP PDF file) with the following.

The following traffic volumes are provided as projections for planning purposes only and subject to change. The projected Average Annual Daily Traffic (AADT) for the Findlay Connector in 2018 is estimated to be between 5,000 and 6,000 transactions per day. After opening the remaining segments of the Southern Beltway in the 4th quarter of 2019, the projected AADT is projected to be between 9,500 and 11,500 transactions per site per day (combined total of both directions). The ten (10) year AADT traffic projections are between 11,000 and 13,000 transactions per day per site.

12. Replace Attachment 1 – Cashless Toll Zone Locations in its entirety with the revised Attachment 1 – Cashless Toll Zone Locations Addendum #2 04-15-2016 provided as attached to this addendum.
Changes Noted:

- Added a Zone type 7 (Z7) Spaceframe with Maintenance from Below (2+2+0) to the Table 1.
- Changed the Toll Zone type to Zone types 7 in table 2.

13. Replace Attachment 10 – Cashless Tolling Concept Plan in its entirety with the revised Attachment 10 – Cashless Tolling Concept Plan Addendum #2 04-15-2016 provided as attached to this addendum.
Changes Noted:

- Added note to system with base contract only and system with all options exercised that the Cashless Toll Host may reside in the PTC Data Center, Private Cloud or other PTC Approved Location.

14. Replace Exhibit F-7 - Price Proposal in its entirety with the revised Exhibit F-7 – Price Proposal Addendum #2 04-15-2016 provided as attached to this addendum. Electronic file is also provided.

Changes Noted:

- Removed UPS from pricing sheet 3-2 Backup In-Lane-Host-Spares
- Updated Zone type in Base Pricing to a Zone 7 (2+2+0) maintenance from below from a Zone type 5 (2+1+1) maintenance from below on sheet 2-1 Backup In-Lane.
- Removed Labor Costs from Exhibit D -Payment Schedule for Payments Related to Hardware, Equipment and Off-the-Shelf Software.

15. Replace Table 1-1 within Section 1.12 on page 5 of 35 of the RFP (9 of 1050 in original RFP PDF file and Revision #2 on Addendum #1) in its entirety with the following:

ACTIVITY	DATE	TIME
Request for Proposal Issued	February 17, 2016	N/A
Deadline for submission of written questions for the Pre-Proposal Conference	February 29, 2016	5 p.m.
Pre-Proposal Conference	March 2, 2016	1:00 p.m.
Deadline for Proposers to Submit Final Questions	April 6, 2016	1:00 p.m.
Due Date for Proposals	May 12, 2016	2 p.m.
PTC Site Visits of Deployments	TBD	TBD
Oral Clarifications/Presentations	TBD	TBD
Anticipated Notice to Proceed	January 2017	N/A

QUESTIONS AND ANSWERS

Following are the answers to questions submitted in response to the above referenced RFP as of April 6, 2016. All of the questions have been listed, as received by the Pennsylvania Turnpike Commission.

#	Page	Section	Section Description	Proposer Question	Commission Response
1	Page 18 of Exhibit A: SOW (PDF page 65 of 1050 in 100824.pdf)	SOW Section 2.1.5.4	Optical Character Recognition (OCR)	"103 The OCR/ALPR Software procured, furnished, and installed under this Contract can include Software that enhances and improves the accuracy and efficiency of the OCR/ALPR process. The System shall meet the OCR/ALPR performance requirements specified in this Scope of Work for license plates from States of PA, NY, NJ, IN, OH, MD, IL, DE, FL and VA." Please confirm the relative frequency of occurrence for vehicles from these jurisdictions at the 6 toll zones in the base proposal.	Details to be provided during the Design phase.
2	Page 31 of the RFP (PDF page 35 of 1050 in 100824.pdf)	RFP Section 2.4 (Submission of Price Proposal) item 8	Submission of Price Proposal	"8) Any costs for Work that is not provided in the Price Proposal will be assumed as no charge to the Commission." Please confirm that this provision pertains to in-scope Work. Please clarify the mechanism by which the Commission may request, and pay for, work to be done that falls beyond the scope of the original contract.	Confirmed. See Attachment 13 - ETC System Change Control Procedures.
3	Page 71-73 of Exhibit A: SOW (PDF page 220-222 of 1050 in 100824.pdf)	SOW Sect 2.5 (Accuracy Requirements), Reqts 574-586	Accuracy Requirements	Requirements 574-586 do not include actual performance numbers but refer instead to a "Design Specification" that does not appear to be part of the RFP package. Please confirm the actual numerical values that must be met for each of those performance requirements.	Numerical values are provided in Section 2.5.
4	Page 150 of Exhibit A: SOW (PDF	SOW Sect 7.4 Reqt 1051	Cashless Tolling Network Maintenance Support Services - Commission	"1051 The Contractor shall provide Commission Approved diagnostic aids, tools and Equipment to perform monitoring services, as necessary to assist	The tools used to monitor the converted cashless 'in-place' operations are not applicable to the

#	Page	Section	Section Description	Proposer Question	Commission Response
	page 197 of 1050 in 100824.pdf)		Responsibility	Commission technical staff monitor the Cashless Toll Host System." So that all bidders can respond effectively, please describe what diagnostic aids, tools and equipment have been used by Commission staff with respect to the toll zones that have already been converted to cashless "in-place" operations.	diagnostic aids, tools and Equipment needed for monitoring the Cashless Toll Host System provided by the Contractor under this contract.
5	PDF page 237-248 of 1050 in 100824.pdf	Exhibit A: SOW, Attachment 5	Concept Plans for Overhead Structures / Toll Gantries	Attachment 5 shows 4 different layouts for the toll gantry structure. Is the bidder free to pick the option best suited to their tolling solution, or will other factors be used by the Commission to select from amongst these four options? If that latter, what are the other factors?	See Section 2.2.2, proposer is to provide information to support Commission design of infrastructure.
6	PDF page 237-248 of 1050 in 100824.pdf	Exhibit A: SOW, Attachment 5	Concept Plans for Overhead Structures / Toll Gantries	Will the selected gantry structure be walkable, permitting maintenance by personnel above the roadway?	No, not for base contract. Future options may include such designs.
7	PDF page 237-248 of 1050 in 100824.pdf	Exhibit A: SOW, Attachment 5	Concept Plans for Overhead Structures / Toll Gantries	Can power distribution boxes or other electronics that needs to be in close proximity to gantry-mounted sensors be attached to the gantry support structure or would it need to be on an equipment pad in the central median between the two directions of traffic?	Details to be refined in coordination with Civil Designer during the Design phase.
8	PDF page 237-248 of 1050 in 100824.pdf	Exhibit A: SOW, Attachment 5	Concept Plans for Overhead Structures / Toll Gantries	Please confirm the Commission-supplied equipment building is centered between the gantries for each direction of traffic, and please confirm the best-case and worst case distances from the building to the nearest toll gantry support column.	Details to be refined in coordination with Civil Designer during the Design phase.
9	PDF page 237-248 of 1050 in	Exhibit A: SOW, Attachment 5	Concept Plans for Overhead Structures / Toll	For the 6 toll zones in the base proposal, please confirm the best-case and worst-case distances from each travel	Details to be refined in coordination with Civil Designer during the Design phase.

#	Page	Section	Section Description	Proposer Question	Commission Response
	100824.pdf		Gantries	lane to the nearest toll gantry support column.	
10	Page 10 of Exhibit A: SOW (PDF page 57 of 1050 in 100824.pdf)	SOW 2.1.1.7	Environmental	"24 Lane electronics, zone controllers, LPICPS controllers/servers and other components shall be able to operate in the sealed and enclosed environment of the equipment racks installed within the toll equipment building." Please confirm the operating and storage (in case environmental controls fail) temperature ranges for equipment to be housed in this building.	See section 2.1.1.7 for environmental requirements.
11	Page 16 of Exhibit A: SOW (PDF page 63 of 1050 in 100824.pdf)	SOW Section 2.1.5.3,Reqt 79,	License Plate Image Capture and Processing Systems (LPICPS)	"79 Contractor shall install high resolution front and rear color ALPR cameras to meet the requirements of the Scope of Work." Is it acceptable that a monochrome camera be used for a front plate if overall performance can be improved?	No.
12	Page 168 of Exhibit A: SOW (PDF page 2215 of 1050 in 100824.pdf)	SOW Section 7.22.3, Reqt 1164	Mean Time Between Failures (MTBF)	"1164 The Contractor may be assessed Liquidated Damages of $500 for each Sub-System not meeting requirement due to Contractor and Contractor System failure". Please confirm that this is measured and assessed on a calendar month basis.	See Requirement #1163.
13	Page 168 of Exhibit A: SOW (PDF page 2215 of 1050 in 100824.pdf)	SOW Section 7.22.3, Reqt 1164	Mean Time Between Failures (MTBF)	"1164 The Contractor may be assessed Liquidated Damages of $500 for each Sub-System not meeting requirement due to Contractor and Contractor System failure". Please confirm that in this context "requirement" is defined as "MTBF requirement" from Requirement 1162	Confirmed.

#	Page	Section	Section Description	Proposer Question	Commission Response
				above.	
14	Page 13 of the RFP (Page 18 of 1050 in 100824.pdf)	RFP Section 2.2.1, Table 2-1	Proposal Page Limitations	Table 2-1 allocates a combined total 100 page limit for 5 Proposal Sections 1-5. Given the requirements necessary to furnish an adequate response for each section, particularly 3 through 5, would the PTC consider a combined total of 150 pages?	Yes. See Revision#1 in Addendum #2.
15	Page 13 of Exhibit A: SOW (PDF page 60 of 1050 in 100824.pdf)	SOW Sect 2.1.4.1, Reqt51	Toll System Software Security	"51 A system level account shall be provided for Commission security systems to perform vulnerability scans using a tool such as Tenable/Nessus, Qualys or other commercial vulnerability scanning tool. Additionally, Commission IT Security can request the Contractor to perform any scans and ensuing reports through the term of the Contract." Are these tools supplied by the Commission or by the Contractor?	The Contractor must provide the tools to perform and report on their own scans. The Contractor must provide access to the System for the PTC to perform its own scans. The PTC will provide its own tools.
16	Page 38 of Exhibit A: SOW (PDF page 85 of 1050 in 100824.pdf)	SOW 2.1.10.4, Reqt 269	Toll Equipment Building	"269 At locations where tolling points are in close proximity to one another, . . ." Will toll zones for opposite directions of traffic every be side by side? If not, is there a minimum distance between toll zones as measured along the project midline?	See Section 2.2.2, proposer is to provide information to support Commission design of infrastructure.
17	PDF page 231-233, 232 of 1050 in 100824.pdf	SOW Attachment 4A, 4B	PTC Proposed AVC Class Structure and Silhouette, E-ZPass Group Mapped Classes	SOW Attachment 4B provides a IAG Mapped Class with a note that indicates PTC assigns class based on vehicle weight as measured in the lane. Attachment 4A provides a different method of assigning a PTC vehicle class that is based solely on axle count and vehicle height profile. Please confirm whether the 6 toll zones in the base proposal should be assigning vehicle class based on method 2 (Attachment 4A) only, and are not required	Confirmed. Vehicle class will be based on axle plus dimension for the base contract.

#	Page	Section	Section Description	Proposer Question	Commission Response
				to consider actual vehicle weight as suggested by Attachment 4B	
18	Exhibit A: SOW, Page 16 and Attachment 4A, 4B (PDF pages 63, 231, 232 of 1050 in 100824.pdf)	Exhibit A: SOW, Attachment 4A, 4B and SOW 2.1.5.2, Reqt 76	PTC Proposed AVC Class Structure and Silhouette), E-ZPass Group Mapped Classes, and SOW 2.1.5.2 Classification (AVC) System, Reqt 76	If the vehicle class read from a PTC TDM transponder does not agree with the vehicle class assigned by one of the six toll zones in this base proposal, is that considered a "class mismatch' per Requirement ID 76. When this does occur which vehicle classification method (SOW Attachment 4A or SOW Attachment 4B) should be considered correct for the purposes of assigning a toll rate?	Yes this is considered a class mismatch. To be further defined during the business rules development and Design phases.
19	Exhibit A: SOW, Page 46 and Attachment 10 (PDF pages 674-675 of 1050 in100824.pdf)	Exhibit A: SOW Attachment 10, and SOW 2.2.2.8, Req't 341	SOW Attachment 10, and 2.2.2.8 Communications Equipment, Req't 341	" . . . Interface to SAP. The Cashless Toll Host System shall transmit monthly toll transaction, account and other GL files received from the CSC/VPC system. Interface to SAP shall be further defined during the Design phase." Based on SOW Attachment 10 neither the Base System nor the System with All Options Exercised would have any interface between Contractor equipment and SAP. Please confirm that SAP interface is between SAP and third-party equipment and not to a Host provided by Contractor. Alternatively, explain the SAP interface in sufficient detail that all bidders can respond to it on an equal footing when submitting their proposals.	The interface from the Cashless Toll Host to the SAP system as it relates to files received from the CSC is only a pass-through of the files received from the CSC; please see SOW requirements 511 and 512. Interface details to SAP will be developed during the Design phase.
20	Exhibit A: SOW, Page 47, (pg 95 of 1050 in 100824.pdf)	SOW 2.2.3.1, Reqt 346	Data Communications and Interface Requirements	The interface between the MOMS and the current Commission diagnostic monitoring system. Is this diagnostic monitoring system SNMP based or will it require a custom interface?	PTC to provide details on diagnostic monitoring system during the Design phase.

#	Page	Section	Section Description	Proposer Question	Commission Response
21	Exhibit A: SOW, Page 58 (pg 105 of 1050 in 100824.pdf)	SOW Section 2.2.4.5, Reqt 453	Cashless Tolling Dashboard	"There shall be an overview representation of all the highways from which individual highways can be accessed." Does this apply to the interface with Commission Diagnostic Monitoring System? Is the expectation is that MOMS will issue work orders for all facilities?	The Cashless Tolling Dashboard will monitor and issue work orders for Southern Beltway/Findlay as included in the base contract. Monitoring of future Cashless Tolling (defined as optional) facilities will be included only if executed in the future through this contract.
22	Exhibit A: SOW, Page 64 (pg 111 of 1050 in 100824.pdf)	SOW Section 2.2.5.2	Cashless Toll Host System Interface to CSC/VPC	This interface "shall be capable of receiving the following financial data from the existing CSC/VPC system for transfer" Is this simply a pass through interface? Will the new Host have to generate any financial data for transfer?	Yes the Cashless Toll Host serves as a pass-through for CSC files.
23	Exhibit A: SOW, Page 68 (pg 115 of 1050 in 100824.pdf)	SOW Section 2.2.6.1, Reqt 538	MOMS General Requirements	"Provide a MOMS that interfaces with the Commission SAP to exchange work order creation and disposition data, and Equipment inventory data as defined during the Design phase." Is this interface between MOMS and SAP required regardless of whether the SAP option is exercised or not?	As part of future work, should All Options be exercised the Existing PTC Toll Host will not exist at which time the Cashless Toll Host will interface to the SAP system. Interface details to SAP will be developed during the Design phase.
24	Exhibit A: SOW, Page 46 (pg 93 of 1050 in 100824.pdf)	SOW Section 2.2.2.8, Reqt 335	Communications Equipment	"The Contractor shall be responsible for providing and obtaining the connectivity from any primary or secondary Cashless Toll Host locations to the PTC Data Center." Attachment 10 Cashless Tolling Concept Plan, Page 1 titled Current System details the existing Host equipment located at the PTC Data Center. Page 2, titled System with Base Contract Only - does not detail a location for the Contractor Toll Host while page 3 titled System with all options exercised details the AET Host located at the PTC data Centre. Can we assume the AET Host can/will	See requirement #282.

#	Page	Section	Section Description	Proposer Question	Commission Response
				be located at the PTC Data Center?	
25	Exhibit A: SOW, Page 78 (pg 813 of 1050 in 100824.pdf)	SOW Section 3.3.1, Reqt 607	Cashless Tolling Transition Plan	"address the migration of data from the current PTC Toll Host to the Cashless Toll Host System for new facilities as well as when existing facilities are converted to cashless tolling and the existing PTC Toll Host system is de- commissioned." Can we have details on the number of existing facilities serviced and the expected number of new facilities, and also the amount of data that will be migrated? Will a data dictionary be provided?	Data migration only applies to future options. This requirement refers to the Transition Plan for migrating data. Details of data volumes and details would be determined at the time of expanded work for future options.
26	RFP page 14	RFP section 2.2.1	Economy of Preparation and Page Limits	Would PTC consider excluding the table of contents, the table of tables and the table of figures from the 100-page limit for the Technical Proposal Sections 1-5?	Yes. Exclude the table of contents, table of tables and table of figures.
27	Exhibit A: SOW, Page 145 (pg 847 of 1050 in 100824.pdf)	SOW Section 7.3.1, Reqt 1033	Cashless Tolling In-lane Systems Hardware Maintenance and Software support Services	“reviewing OCR/ALPR results" Is this a statistical analysis based on confidence levels or is this a visual process more related to an audit function or manual image processing?	See requirement #1032.
28	RFP page 3	1.6	1.6 Contractor Integrity Provisions	Section 1.6 references a transmittal letter, but 2.2.2 Technical Proposal Format and Contents section doesn’t make a particular provision or allowance for that. Question: Would PTC allow Proposers to include a Transmittal Letter (to be inserted after Form F-1 Proposal Cover Page) and not count it towards the 100-page limit?	Yes.
29	RFP page 14 and RFP	Section 2.2.1, Table 2-1, and	2.2.1 Economy of Preparation and Page Limitations and	Proposal Section 7 is labeled "Other Required Materials" in this table. RFP Section 2.2.2 Technical Proposal Format and Contents labels this same Proposal Section 7	Proposal Section 7 should be labeled Forms and Submittals. See Revision #1 in Addendum #2.

#	Page	Section	Section Description	Proposer Question	Commission Response
	page 28	2.2.2.	2.2.2.Technical Proposal Format and Contents	as "Forms and Submittals." Which is the correct label for Proposal Section 7 to be used in Bidders' technical proposals?	
30	RFP page 25	Section 2.2.2, subsection 17	Technical Proposal Format and Contents	Requirement: "Provide a plan for staffing on the Commission site from installation through Acceptance." Question: Please define the Commission site, and provide location information.	See requirement #712.
31	RFP page 25	RFP Section 2.2.2, Proposal Section 4, subsection 9	Technical Proposal Format and Contents.	Requirement: "Specifically address what elements will be in place during the installation process to ensure timely communication and resolution of problems with the Commission's civil designer and contractor without the intervention of the Commission." Question: Please define "element" in this context.	"Element" can refer to a procedure or process used to achieve the stated goal.
32	RFP pages 28 - 29	Section 2.2.2, Proposal Appendices, pages 28 and 29 of 35	Technical Proposal Format and Contents.	Besides Appendices 1-4 mandated by the RFP, is it permissible to append to this section other materials that we may deem essential to the our proposal?	See Section 2.2.2 for definitions of what is to be included in appendices.
33	29	2.2	Proposal Appendices	Given the length of our audited financial statements, can Bidders provide these documents in electronic format only?	Yes, it should be included in the 2 electronic submissions of the entire proposal..
34	5 of 35	1.14	Questions and Answers	When is the anticipated date that the PTC will provide responses to the bidder questions that are due on April 6th?	N/A
35	5 of 35	1.14	Questions and Answers	To allow Proposer's the maximum time to incorporate PTC responses into our solution and proposal responses, would PTC consider answering questions in multiple sets	The proposal due date has been revised to May 12, 2016. See Revision #15 above for more details.

#	Page	Section	Section Description	Proposer Question	Commission Response
				as they are received rather than answering all questions after the April 6th deadline?	
36	Page 1 of 171	Attachment 1	Cashless Toll Zone locations	This section describes each of the 6 tolling zones will be zone type %. Zone type 5 includes 2 lanes, 1 full shoulder and 1 partial shoulder. Please provide the widths of the partial lanes so we can determine if the partial lanes needs to be fully equipped.	See Requirement #44 See revised Attachment 1: Cashless Toll Zone Locations Revision #12 in Addendum #2.
37	Page 19 of 171	Section 2.1.5.4	OCR/ALPR	Requirement 107 states that the images transferred to the CSC must be uncompressed. There is also a requirement that all data be stored at the lane level for 30 days. If the images have been successfully transmitted to the CSC (with acknowledgment receipt) can the image be stored in a compressed format at the lane level?	Yes.
38	Page 36 of 171	Section 2.1.10.3	UPS	Requirement 262 states "The Contractor shall furnish and install an electronic interface to the UPS to monitor the UPS performance." Please provide the make and model of the UPS's that will be used for this project.	Details to be refined in coordination with Civil Designer during the Design phase.
39	Attachment 5	Attachment 5	Space Frame Gantry	This section shows four different space frame gantries. Will the contractor have the option of which space frame gantry to use? Can you please provide the dimensions (including distance apart for the multiple gantries) for each of the space frame configurations?	See Section 2.2.2, proposer is to provide information to support Commission design of infrastructure.
40	SOW – instances	SOW – instances	Expected Traffic volumes	The RFP makes several mentions to "volumes as specified in this scope of work".	See revision #11 in Addendum #2.

#	Page	Section	Section Description	Proposer Question	Commission Response
	throughout	throughout		We have been unable to locate this information in the RFP. Please provide the expected volumes or the location in the RFP where the volumes at the new tolling zones can be found including expected growth rate over the next 10 years.	
41	Page 974 RFP	Section 11.2 Project Implementation Schedule	Submission of Baseline Project Implementation Schedule	The RFP mentions the Baseline schedule to be submitted 10 days after NTP. But on page 823, Req # 736 it says 15 days. Please clarify number of days after NTP that the Baseline Implementation schedule should be submitted.	15 Calendar days. See revision #2 in Addendum #2.
42	Page 18 of 171	Section 2.1.5.4	Optical Character Recognition (OCR)/Automatic License Plate Recognition (ALPR)	What will the License Plate Type be used for?	Some states issue the same license plate number to different class of vehicle or type of plate (specialty plates) and the license plate type is required to make the license plate number unique.
43	Page 18 of 170	Section 2.1.5.4	Optical Character Recognition (OCR)/Automatic License Plate Recognition (ALPR)	Please provide a list of license plate types per state.	Details to be provided during the Design phase.
44	Page 4 of 171	Section 1.2	Overview	"The Commission reserves the right to procure all third party hardware for the Cashless Tolling System and the Contractor shall take delivery and responsibility for the Commission purchased hardware" If the Commission purchases hardware, who has the responsibility for product updates, warranty support and general logistics support with the vendor ?	The Commission will take responsibility for hardware purchased directly by the Commission. See Section 5.1.4 for coordination requirements.

#	Page	Section	Section Description	Proposer Question	Commission Response
45	Page 4 of 170	1.2	Overview	What are the procedures and policies regarding force majeure events?	Refer to Exhibit G - Draft Contract Section 20.
46	SOW page 7 of 171	2.1.1.1	Cashless Tolling System Hardware	Item 1-Can FAT equipment be reused for production installations?	No.
47	SOW Page 8 of 171	2.1.1	Maintainability	What overall means of lightning protection will be provided by the civil contractor?	See Section 2.2.2, proposer is to provide information to support Commission design of infrastructure.
48	SOW Page 8 of 171	2.1.1	Maintainability	Are lightning events considered force majeure and covered outside the scope of the maintenance contract?	Refer to Exhibit G - Draft Contract Section 20.
49	SOW Page 11 of 171	2.1.1.8	Assembly	What is considered to be “customized hardware”?	Customized hardware refers to hardware not readily available for purchase, including proprietary hardware.
50	Page 14 of 171	2.1.5.1	AVI System #55	The Commission will procure antennas and readers as specified by the Contractor”. Who has the responsibility for product updates, warranty support and general logistics support with the vendor?	PTC is responsible. See Section 5.1.4 for coordination requirements.
51	Page 94 of 171	5.1.2	Contractor’s Project Management Office #712	“The Contractor shall establish a Project management office in the Harrisburg metropolitan area. All Project management activities shall be conducted from this office”. Please clarify “All Project management activities”. Is this specifically for the Findlay Connector work or for optional Turnpike projects?	See Section 5.1 for project management responsibilities.
52	Page 135 of	6.3	Onsite First Installation	“Performance requirement shall be verified using	To be identified during the Test Plan

#	Page	Section	Section Description	Proposer Question	Commission Response
	171		Test (OFIT) #978	Approved sample size" What methodology will be used to calculate the approved sample size?	Development.
53	Page 137 of 171	6.5	Cashless Tolling System Operational and Acceptance Test	Can the referenced 4 calendar months begin mid-month or must the 4 month period begin on the 1st of the month?	The testing period may begin on any date within the month.
54	SOW - Page 94 of 171	Requirement 712	Project Management	In RFP Section 4, number 7, it states: "The Commission desires a local project office with a dedicated on-site project manager during Implementation Phase. In your plan identify which staff will be on-site in this time period and for what percentage of time." But in Requirement 712 it states: "The Contractor shall establish a Project management office in the Harrisburg metropolitan area. All Project management activities shall be conducted from this office". Can the PTC confirm the requirement described in the RFP section is correct?	A project management office shall be established for the Implementation Phase. Initially for the base contract but would also be required for future implementations should the Commission exercise optional implementations.
55	Exhibit G	Exhibit G	Sect 24. Liquidated Damages and Performance Adjustments	The RFP States "Liquidated damages in the amount of up to $30,000 per Calendar Day shall be assessed for the CONTRACTOR's failure to complete Commissioning at locations on the Findlay Connector/Southern Beltway." Can the Commission provide clarity on how the amount "up to" $30,000 per day will be calculated and assessed?	Damages may be assessed based on good faith estimates including but not limited to traffic and revenue data and/or projections.
56	SOW - 166 of 171	N/A	Section 24. Liquidated Damages and Performance Adjustments	Will the Commission consider including incentives equivalent to the completion penalties for completing the required scope early?	No.

#	Page	Section	Section Description	Proposer Question	Commission Response
57	2.1.6	Enforcement Notification – Optional Req 113	The Cashless Tolling System shall support the Maintenance and update of VEL that contains transponder numbers and license plate numbers that the Commission requires notification on. This could include repeat violators.	What is the maximum number of many license plates and transponders that are to be included in the violation enforcement list (VEL)?	To be determined during the Design Phase.
58	2.1.6	Enforcement Notification – Optional Req 116	Notification methods shall include but not be limited to text message, email or system to system interface.	Is the requirement to support text message, email and a system to system interface, or minimally one of these?	The requirement is to provide all three options but is not limited to.
59	2.1.6	Enforcement Notification – Optional Req 119	The System shall support the transmission of images (configurable) to the applicable personnel and shall include the image of the vehicle or just the ROI.	Is it anticipated that the images would be part of the notifications and subject to the 20 second alert requirement in #117 ?	To be determined during the Design Phase.
60	2.1.7.2	Zone Controller Software - Guaranteed Messaging Req 132	AVC system;	Please confirm if guaranteed messaging is only applicable to data that can be buffered. E.g. guaranteed messaging is not normally applicable to real time events, including AVC processing. E.g. streaming data from inductive loops must be processed within a few milliseconds (otherwise the associated vehicle is no longer present).	Guaranteed transmission of real time events is not required; however, it is the Contractor's responsibility to ensure that the requirements of the Scope of Work are met.

#	Page	Section	Section Description	Proposer Question	Commission Response
61	2.1.7.2	Zone Controller Software - Guaranteed Messaging Req 132	DVAS;	This appears to conflict with requirement 175 which states "The zone controller shall interface with the DVAS to transmit event data for display on the DVAS. The event data shall include transponder reads and AVC event messages that are received as the vehicle travels through the lane." Please confirm if this is a requirement to have all buffered events and transactions also forwarded to the DVAS as opposed to only those that are received as the vehicle travels through the lane. Normally only real-time events are displayed on the DVAS as buffering and displaying AVI reads, AVC data, etc. for vehicles that were processed in the past is not normally desirable for monitoring and/or audit processes.	Buffered data should be displayed on the DVAS as it becomes available.
62	2.1.7.5	Transaction Processing Req 143	· the System shall have the ability to process and record multiple transponders in a vehicle and associate each transponder to the vehicle transaction;	Please confirm if it is acceptable to generate multiple transactions which are then associated with the vehicle at the back office, or if this is a requirement for all transponders to be associated with a vehicle and included in a single transaction?	Yes, multiple transactions are acceptable provided all other applicable requirements are met such as transponder association.
63	2.1.7.5	Transaction Processing Req 143	· any non-E-ZPass Group interoperable transponder reads shall be reported to the Cashless Toll Host System;	Is this a requirement to support additional protocols such as ISO 18000 6C, Sego, etc. - or a requirement to process and report E-ZPass Group (formerly IAG) transponders that are not interoperable at the CSC level (e.g. not in the transponder validation list)?	See requirement #61and #143.
64	2.1.7.5	Transaction Processing Req 143	· any non-E-ZPass Group interoperable transponder reads shall be reported to the Cashless	If this is a requirement to support additional protocols such as ISO 18000 6C, Sego, etc. - which protocols are to be supported?	Please see requirements #54, 55, 567 and 568.

#	Page	Section	Section Description	Proposer Question	Commission Response
			Toll Host System;		
65	2.1.7.8	Fare Determination Req 143	Fare determination is not required at the In-lane Systems, and can be performed at the Cashless Tolling Host or PTC Toll Host. The Contractor solution shall include fare determination at the Cashless Toll Host or the In-lane Systems for AVI transactions and shall meet the following requirements. Currently the existing CSC/VPC system assesses the toll for violation transactions and will continue to do so for video transactions; however, the Contractor can assign the toll to video transactions if the Contractor solution provides this capability.	Does the PTC have any preference as to where the fare determination should take place?	No.
66	2.1.7.8	Fare Determination Req 152	Fare determination shall be performed at the In-lane Systems, the Cashless Toll Host system or the PTC Toll Host for all	Are the fare tables going to be consistent with the current formats used on the PTC Turnpike, or are any changes anticipated?	Fare tables will change due to classification changes, but the general format will be finalized during the design phase.

#	Page	Section	Section Description	Proposer Question	Commission Response
			AVI transactions.		
67	2.2.6.2	System Health Monitoring Software Req 559	· tight integration with the MOMS;	Can the PTC elaborate on what specifically is meant by 'tight integration with the MOMS '?	Integration shall support the MOMS requirements, see Section 2.2.6.
68	2.2.6.2	System Health Monitoring Software Req 559	· Hardware and network health monitoring;	Is it acceptable to use communication status between subsystems to determine network health, or is there a specific requirement for installing and monitoring managed switches?	See Section 2.2.6 for requirements.
69	2.2.6.2	System Health Monitoring Software Req 559	· a dashboard that graphically displays component's health;	Is it acceptable to provide a color coded matrix to identify the status of all devices by lane? Is this a requirement to include the status of the Cashless Host, DVAS, etc. as well?	PTC will work with Contractor during design phase to determine acceptable methods of status identification.
70	2.2.6.2	System Health Monitoring Software Req 559	· Integration with existing Commission monitoring Software.	Is the PTC monitoring software a 3rd party solution? If not, can additional details regarding interface specification be provided for estimation purposes? E.g. Is this a web service, SNMP based, a proprietary TCPIP client/server application?	PTC to provide details on diagnostic monitoring system during the Design phase.
71	2.2.6.3	Time Synchronization Req 560	The Cashless Toll Host server shall be synchronized to a certified source Approved by the Commission using the standard network time protocol (NTP) at configurable intervals, but at a minimum of every five	Is the contractor required to provide a physical NTP server or can this be a public NTP server (e.g. NIST) - or will the Commission be providing an NTP server?	No PTC preference. As long as SOW including PTC IT Security standards are met.

#	Page	Section	Section Description	Proposer Question	Commission Response
			(5) minutes.		
72	5.3	Software Design and Development Requirements Req 747	Prior to the Software walkthrough, the Contractor shall develop and submit the use cases that will be demonstrated to the Commission for review and Approval. The walkthrough shall follow the process flow and emulate normal operations.	Can the Commission provide a sample of the Use Case format/ content that is anticipated, and a list of which functional, operational, performance, security requirements are to be included, by subsystem?	Use Cases are to be developed per standard industry practices by Contractor and should replicate all potential scenarios to demonstrate the full functionality of the system.
73	5.3.1	System Requirements Review (SRR)	The product shall be demonstrated in a test environment that allows data to flow as it will in the final integrated System.	Please confirm if 'allows data to flow as it will in the final integrated System' is a requirement to demonstrate that the system currently implemented the approved ICDs.	Confirmed.
74	5.3.1	System Requirements Review (SRR)	The product shall be demonstrated in a test environment that allows data to flow as it will in the final integrated System.	Are there any hardware or simulation requirements associated with this requirement and demonstrating the full production capacity is supported for transaction and image processing?	See Requirement #587.
75	5.3.1	System Requirements Review (SRR)	The product shall be demonstrated in a test environment that allows data to flow as it will in the final integrated System.	For systems which are owned or maintained by the Commission, will test systems be provided remotely or physically?	Question refers to Requirement #773 (Section 5.3.5 Software Walkthrough). PTC to provide test environments if necessary for Commission responsible systems based on Approved test

#	Page	Section	Section Description	Proposer Question	Commission Response
					plans.
76	5.3.1	System Requirements Review (SRR) - Req 749	The Software walkthrough shall demonstrate to the Commission that the developed Software product meets the technical and functional Requirements of the Contract.	Can the Commission provide the expectations for how many demonstrations are anticipated, and which subsystems are to be included in each?	See Section 5.3.5of the SOW.
77	5.3.4	Reports Design Workshops	The Contractor shall be responsible for identifying and correcting any Software issues or defects in its Design or product that impact the Contractor's ability to deliver the Cashless Tolling System that meets the Contract requirements. This shall apply to issues or defects found during or after Software walkthrough or in the subsequent testing and Implementation. Any such changes shall be Approved by the Commission in writing.	Please confirm that the demonstrations are to be executed after the design was approved by the Commission, and after the contractor has completed implementing at least 50% of the modifications to the baseline software to meet the approved detailed design.	See Section 5.3.5of the SOW.
78	5.4.7	Software Development	· gap analysis of baseline code to Contractor	Please confirm that this is in reference to the baseline	The gap analysis compares the baseline requirements to the final

#	Page	Section	Section Description	Proposer Question	Commission Response
		Plan (SDP) - Req 826	Requirements;	requirements, not the approved requirements.	approved Contractor requirements.
79	5.4.12.1	Third Party Software Documentation - Req 852	· Interface documents;	For any 3rd party proprietary interfaces, please confirm if it is acceptable for these to be included under an Escrow agreement.	Confirmed.
80	5.4.12.1	Third Party Software Documentation - Req 852	· Interface documents;	For all proprietary or confidential ICDs and documentation, please confirm if the Commission will be obtaining in NDAs with the respective parties.	NDA's are the responsibility of the requesting party.
81	7.22.5	Transmission of TSL and VEL to the In- Lane Cashless Tolling System - Req 1168	The Contractor may be subject to Liquidated Damages of $500 per occurrence per one (1) hour delay for failure to successfully and accurately transmit the TSL to each of the zone controller.	Please confirm if this excludes delays resulting from force majeure, and/or any other delays that are outside the control of the Contractor .	Refer to Exhibit G - Draft Contract Section 20.
82	7.22.7	Transaction Processing and Transmission Requirements	For failure to accurately process and reconcile one hundred (100) percent of all transactions and successfully and accurately transmit pursuable and non-pursuable transactions to the existing CSC/VPC	Please confirm if this excludes delays resulting from force majeure, and/or any other delays that are outside the control of the Contractor (e.g. if the existing CSC/VPC are not accessible).	Refer to Exhibit G - Draft Contract Section 20.

#	Page	Section	Section Description	Proposer Question	Commission Response
			system within twenty-four (24) hours of vehicle transit, the Contractor shall be subject to Liquidated Damages of $50 per twenty-four (24) hour delay per 1,000 transactions.		
83	SOW – Attachment 2	RCM -	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to meet requirement Replaced (R) - Function is available within current system, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation	What does The Commission want Contractors to enter into the "Status of Functionality" column in the RCM for requirements that are in the future (e.g. those that will require modifications based upon Commission approvals during the design phase)?	See instructions provided in Exhibit F-6.
84	SOW – Attachment 2	RCM Requirements	Existing (E) - Met by current system, no modifications required Modification (M) - Modifications needed to	What does the Commission want entered for "Status of Functionality" if a requirement is not applicable (facility server requirements, if no facility server is being proposed)?	Enter "N**" and add note that it is "not required."

#	Page	Section	Section Description	Proposer Question	Commission Response
			meet requirement Replaced (R) - Function is available within current system, but will be replaced to meet PTC needs To Be Developed (D) - Not in current system, but will be developed Not Provided (N**) - Will not be provided - requires explanation		
85	SOW 2.1.5.3 # 79	Image Capture Requirements	License Plate Image Capture and Processing 2.1.5.3 Systems (LPICPS)	Requirement 79 states "Contractor shall install high resolution front and rear color ALPR cameras to meet the requirements of the Scope of Work. The Contractor shall install high resolution front and rear color cameras to provide one hundred (100) percent image capture during individual camera failures and excessive glare conditions." 100% image capture during an individual camera failure implies redundant cameras in each lane. Can the Commission confirm this is the case for both front and rear in each lane?	Confirmed.
86	SOW 2.1.5.4	Image Capture Requirements	Optical Character Recognition (OCR)/Automatic License 2.1.5.4 Plate Recognition (ALPR) – Optional	Requirement 102 states "There shall be no backlog or failure in the processing of images for obtaining the license plate data (number, jurisdiction and plate type) and there shall be server redundancy whereby standby servers are available immediately and fully operational in the event of a failure." As there is always some latency between when the plate image is captured and when it is processed, can the Commission provide what latency	See Requirements #587 and #117.

#	Page	Section	Section Description	Proposer Question	Commission Response
				window is acceptable ?	
87	SOW- 71 of 171	2.3 Test Site	Test site location	Requirement 566 states "The Contractor shall install and setup a dedicated test site at a Commission Approved location." Is this location to be provided by the Commission or contractor?	Location is to be provided by the Contractor. See revision #7 in Addendum #2.
88	SOW – 156 of 171	7.10 Spare Parts	Spare parts	Requirement 1092 states "Contractor shall be responsible for the inventory of all spare parts at an Approved storage facility(ies) and shall be insured in this regard as set forth in the Contract." Does the Commission prefer one of its facilities be used for spares housing or one provided by the contractor?	See Requirement #1104.
89	SOW – 48 of 171	2.2.3.3	Transaction Audit and Verification	Requirement 352 states "The Cashless Tolling System shall perform an independent automatic audit and verification process that confirms all vehicles traveling through the toll lane are detected and reported as transactions; all transaction transmissions between the zone controller and Cashless Toll Host System are successful and the System has the screens and reports to validate the audit trail." Can the Commission provide additional clarity on its expectation for this requirement?	See revised text for requirement #352, revision #5 in Addendum #2.
90	SOW – 52 of 171	2.2.4.3	Cashless Tolling System Screens and Reports	Requirement 394 states "The ad-hoc reporting tool shall be COTS software and be the latest version at the time of Acceptance testing and field-proven to operate in a transaction intensive environment." - Can the Commission confirm the version approved during design will be acceptable as this software is the contractors' baseline for the acceptance testing?	Confirmed.

#	Page	Section	Section Description	Proposer Question	Commission Response
91	SOW – 54 of 171	2.2.4.3	Cashless Tolling System Screens and Reports	Requirement 410 states ”Data shall be organized and summarized in a manner to allow for report generation within no more than two (2) seconds for daily reports, and no more than twenty (20) seconds for monthly and annual reports, of a report generation request.” Since the report generation time depends on the specific data sets required for each report, can the Commission provide the specific report requirements for the daily, monthly and annual reports this requirement pertains to?	See Attachment 9 of the RFP for sample PTC reports. Note that these are sample existing reports and may be adjusted during the reports development process.
92	SOW Pg. 19 of 171	Section 2.1.5.4	OCR/ALPR Option	# 110 – Will the Commission be allowing wireless device connectivity to the Toll System and if so will such devices need to be capable of reviewing images and data?	Yes. See Attachment 7: PTC Cashless Tolling Security Requirements.
93	SOW Pg. 20 and 40 of 171	SOW #114 and # 290	VES list	What is the typical size of the VEL list downloaded from the CSC?	To be determined in Design phase.
94	SOW Pg. 20 and 40 of 171	SOW #114 and # 290	VES list	What is the frequency that we can expect to receive the VEL list from the CSC?	To be determined in Design phase.
95	SOW Pg. 20 and 40 of 171	SOW #114 and # 290	VES list	Will VPN access be provided by PTC for access to the system for maintenance purposes, or does the contractor need to provide VPN?	The Contractor should plan to provide VPN, final arrangements to be determined in Design.
96	SOW Pg. 72 of 171	#572	Accuracy Requirements	What percentage of “controlled vehicles” will be required for the Operational Test?	To be determined during test plan development.
97	SOW Pg. 72 of 171	#572	Accuracy Requirements	What classes of vehicles will be required to be utilized as “controlled vehicles” during the Operational Test?	To be determined during test plan development.
98	SOW Pg. 71 of 171	#569	Accuracy Requirements	Is the sample size indicated inclusive of all tolling points or each individual tolling point?	To be determined during test plan development.

#	Page	Section	Section Description	Proposer Question	Commission Response
99	SOW Pg. 112 of 171	Master Test Plan	Requirement # 830	What types and/or classes of vehicles will be required for each phase of testing?	To be determined during test plan development.
100	SOW Pg. 137 & 138 of 171	Operation and Acceptance Test	Requirements # 988 and # 998	Please clarify the duration of the Operation and Acceptance test. 988 states 4 calendar months while 998 states 2 monthly audit cycles.	Each Audit Cycle covers a 2 month period, therefore, the Operational and Acceptance Test shall occur over a period of 4 months.
101	Section 2.1.5.4			Section 2.1.5.4 which addresses OCR/ALPR as optional. Will PTC be exercising this option for bidders to include as a part of their respective proposals? If not, will PTC pursue OCR/ALPR under a separate contract?	The Commission may exercise the option in the future. Submission of the option is required as part of the Contractor proposal.
102				Does PTC plan to acquire the manual image review processing component under a separate contract?	Manual Image review is currently handled by the Commission's existing back office provider.
103	12 of 35	1.29	Payment Bond	There seems to be a conflict in language between the RFP and the draft contract. Will PTC please update the contract term to correspond with the RFP requirements below? RFP Language: 1.29 Payment Bond. When awarded the Contract, the Proposer shall furnish one (1) signed original of the Performance Bond and Payment Bond, each in the amount of 100 percent of the total Implementation Phase costs… Section 29 of the Terms and Conditions: …Also furnish an electronic Payment Bond from one of the approved vendors in the amount of 100% of the contract price…	See revision #3 in Addendum #2 to Exhibit G - Draft Contract section 29.

#	Page	Section	Section Description	Proposer Question	Commission Response
104	40 of 46	Draft Contract	Performance bond	The contract language states that the "Performance bond coverage shall be continuous and shall be required on all open base or option project as a part of the Contract that have not yet been Approved or closed-out". Our understanding is that the term "open" as it relates to optional tolling zones/lanes is defined as that part of the project where "implementation has started" and not just when an exercise of an option has been provided to Contractor. Please confirm our understanding.	During final negotiations of future work orders, the bonds need to be in place in order to finalize execution of the work order.
105	Draft contract	General	Bonds	Please confirm that bonds for optional zones/lanes must be provided within a specific timeframe before implementation of that zone begins (i.e. one week prior) and not necessarily at the time of exercise.	During final negotiations of future work orders, the bonds need to be in place in order to finalize execution of the work order.
106	19 of 1050	Part 2 Information Required from Proposers	2.2.2 Technical Proposal Format and Contents Proposal Section 1: Firm Qualifications 2) Provide a detailed discussion of the Proposer's qualifications and experience related to the Scope of Work required by this RFP, including Subcontractor firm's relevant experience.	Can the Subcontractor firm's relevant experience be included in (Proposal Section 7: Other Required Materials)?	See requirements for submitting qualifications under Section 2.2.2 of the RFP.

#	Page	Section	Section Description	Proposer Question	Commission Response
107	Exhibit A, Page 52	2.2.4.3	Cashless Tolling System Screens and Reports	The requirement states: "All reports shall show the status of the validation/audit process, as defined by the Commission and other relevant statuses." Please provide the Commission's definition along with any other relevant statuses other than the ones listed.	Samples of existing PTC reports, which provide audit status, are included in Attachment 9. Categories to be finalized during the Design phase.
108	Exhibit A, Page 13	2.1.4.1	Toll System Software Security	The RFP states "Contractor shall not circumvent the Commission Approved System security. All access to the System and Approved changes made shall be recorded, monitored, reviewed and audited by the Commission. Specific requirements shall be developed by the Contractor during System Design." Can the PTC please provide their current approved System Security Procedures?	See Attachment 7 within Scope of Work.
109	Exhibit A, Page 19	2.1.5.4	Optical Character Recognition (OCR)/Automatic License Plate Recognition Software	The RFP States "All data entered through the independent image review process for testing and audit described above shall be saved separate from the normal production environment and shall be available to Authorized Users through reports. Such an audit process shall not impact normal operations and in most cases will occur after the images are transmitted to the existing CSC/VPC system." How many images are expected to be reviewed on the monthly basis and what is the required retention period for saved images?	To be determined during the Design phase.
110	Exhibit A, Page 100	5.3		A System Requirements Document (SRD) is referenced in Exhibit D (payment schedule) and in paragraph 5.3.1 of Exhibit A. All other references to required documentation in the RFP refer to the Conformed Scope of Work and Requirements	CSWRD and SRD are synonymous in this context. See SOW Sections 5.3.1 and 5.4.1 for requirements of the RTM. See revision #9 in Addendum #2.

#	Page	Section	Section Description	Proposer Question	Commission Response
				Document (CSWRD) and the Requirement Traceability Matrix (RTM). Please confirm that we are not required to deliver an SRD in addition to the CSWRD and RTM.	
111	28 of 1050	Proposal Section 4: Approach to Project Plan and Implementation	Preliminary Project Implementation Schedule in MS Project	A Preliminary Project Implementation Schedule in MS Project format is required as part of Proposal Section 4. Can the full Project Implementation Schedule be included in (Proposal Section 7: Other Required Materials)?	No.
112	882 of 1050	Exhibit F-7…Sheet 3-2	8 - UPS - It references that we should provide pricing on batteries, power supply and inverter.	RFP section 2.1.10.3 indicates the civil contractor is installing the UPS. In order to price the required spares and develop the required interface, please provide the UPS manufacture and model.	UPS will be supplied by Civil Contractor. Additional details on manufacturer and model will be determined during the Design phase. The Contractor will not be responsible for UPS spare parts. See revision #14 in Addendum #2.
113	N/A	N/A	General Question, not tied to a particular section	Please clarify what is included in the option that relates to VEL, Enforcement notification and mobile enforcement. VEL - we view as a list that will be downloaded to the zone controller for the controller to capture images if the plate is on the list. Enforcement Notifications - we view as a message that will be sent to an outside party that provides the details necessary to execute an enforcement action. Mobile Enforcement - we view as a "mobile system of detecting tags while in motion that may include a gantry mounted violation status light" Is the requirements for all three or simple the first 2 – VEL	See requirements for VEL list and notification. See Section 2.1.6 of Scope of Work.

#	Page	Section	Section Description	Proposer Question	Commission Response
				and Enforcement Notification.	
114	N/A	N/A	General Question, not tied to a particular section	Are these assumptions of physical locations correct? – PTC Data Centre will be primary location for the Cashless Toll Host and MOMS and the secondary location can be Contractors choice or PTC's Disaster Location. The Commission Monitoring system is located at PTC data Center. PTC will responsible for communications between Commission Monitoring System and the location of both MOMS or only the primary location?	See Requirements #282 and #335.
115	N/A	N/A	General Question, not tied to a particular section	Is the Data Collector depicted in the Attachment 10 the same as the PTC Toll Host? Are they physically located in the same data center? If the option for the SAP interface is exercised is the intention of the Contractor Host to have the functionality of the Data Collector and the PTC Host along with the SAP interface?	The Real Time Data Collector (RTDC) is not the same as the PTC Toll Host. The RTDC is an intermediate step the PTC currently uses to send transactions to their existing Toll Host. The Cashless Toll Host will replace the RTCD and existing Toll Host and an interface to the SAP will only be exercised after full build out of all options and decommissioning of the existing Toll Host.
116	N/A	N/A	General Question, not tied to a particular section	Is the SAP interface purely a pass through interface? What data is expected to be created on the host and passed to the SAP system?	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of future options for full build out to be defined during the Design phase for future options.
117	RFP, Exhibit A SOW, Attachment 10, Page 2 of	Attachment 10	Attachment 10 Cashless Tolling Concept Plan	The word "posted" appears on one of the diagrams, are we to assume that we will have to maintain accounts? Or maintain reconciliation of transactions or just their transfer status? Will we ever see reconciliation files back from the	No. To be detailed in Design.

#	Page	Section	Section Description	Proposer Question	Commission Response
	3			CSC/VPC?	To be detailed in Design.
118	Exhibit A SOW, Section 2.2.4.4, Page 56 of 171	Exhibit A SOW Section 2.2.4.4, Req't 434	Cashless Toll Host Reports	Vehicles and Mileage Report "vehicle class category for each revenue category between tolling points and total distance traveled" Is this applicable? Are we to assume we will hold the transaction records to determine this information?	To be defined during the report development and Design phase.
119	Exhibit A SOW, Section 2.2.4.5, Page 58 of 171	Exhibit A SOW Section 2.2.4.5, Req't 453	Cashless Tolling Dashboards	"There shall be an overview representation of all the highways from which individual highways can be accessed." Is the scope for the MOMS to have a complete integration with the Commissioning Diagnostic System? How many locations are involved? How many highways?	See Requirement #346. The Cashless Tolling Dashboard will monitor and issue work orders for Southern Beltway/Findlay as included in the base contract. Monitoring of future Cashless Tolling (defined as optional) facilities will be included only if executed through this contract. Monitoring of existing PTC facilities is not required under the base contract.
120	RFP Sect 1.4, Pages 1 and 2 of 35	RFP Sect 1.4	Problem Statement	Please confirm the physical location of the existing "PTC monitoring system".	Pennsylvania Turnpike Commission - TIP Bldg 2850 Turnpike Industrial Park Middletown, PA 17057
121	RFP Sect 1.4, Pages 1 and 2 of 35	RFP Sect 1.4	Problem Statement	Please confirm the physical location of the existing "PTC Toll Host".	Pennsylvania Turnpike Commission - TIP Bldg 2850 Turnpike Industrial Park Middletown, PA 17057
122	RFP Sect 1.4, Pages 1 and 2 of 35	RFP Sect 1.4	Problem Statement	Please confirm the physical location of the existing "CSC/VPC system"	7631 Derry St, Harrisburg, PA 17111 Note this location is scheduled for relocation within Harrisburg in 2017.

#	Page	Section	Section Description	Proposer Question	Commission Response
123	RFP Sect 1.4, Pages 1 and 2 of 35	RFP Sect 1.4	Problem Statement	Please confirm the physical location for the SAP servers. Are they at PTC headquarters in Highspire PA?	Pennsylvania Turnpike Commission - TIP Bldg 2850 Turnpike Industrial Park Middletown, PA 17057
124	Exhibit A SOW, Attachment 10, page 3 of 3 and Exhibit A SOW, Page 64 of 171	Exhibit A SOW, Attachment 10 and Exhibit A SOW, section 2.2.5.1, Reqts 511and 512	Attachment 10, System with All Options Exercised and 2.2.5.1 Cashless Toll Host System to SAP Interface (Optional)	"511 The Contractor shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system." "512 The Contractor shall provide the capability to validate that the received files were successfully transmitted to SAP." Please confirm that since the Cashless Toll Host System and the associated lane solution is "cashless" it will only need to interact with the PTC's SAP Accounts Receivable (AR) function and will not need to interact with other any General Ledger (GL) accounts within the PTC's SAP system.	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.
125	Exhibit A SOW, Attachment 10, page 3 of 3, and Exhibit A SOW, Page 64 of 171	Exhibit A, SOW, Attachment 10, and Exhibit A SOW, section 2.2.5.1, Reqts 511, 512	Attachment 10, System with All Options Exercised and 2.2.5.1 Cashless Toll Host System to SAP Interface (Optional), Reqts 511, 512	"511 The Contractor shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system." "512 The Contractor shall provide the capability to validate that the received files were successfully transmitted to SAP." SOW Attachment 10 page 3 of 3 (All Options Exercised) shows the new Cashless Toll Host System connecting to PTC's SAP system and includes SAP's Business	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.

#	Page	Section	Section Description	Proposer Question	Commission Response
				Intelligence (BI) function amongst those highlighted. Please confirm the extent to which SAP BI functions need to be considered by the bidders given that posting of cashless toll transaction information to the Accounts Receivable portion in the General Ledger does not require use of SAP BI.	
126	Exhibit A SOW, Attachment 10, page 3 of 3, and Exhibit A SOW Page 64 of 171	Exhibit A, SOW, Attachment 10, and Exhibit A SOW, section 2.2.5.1	Attachment 10, System with All Options Exercised" and 2.2.5.1 Cashless Toll Host System to SAP Interface (Optional)	SOW Attachment 10 page 3 of 3 (System with All Options Included) shows "Monthly GL", "Surety" and "Tag/Account" files being passed from the existing CSC/VPC Host to the new "AET Toll Host" and from there on to the PTC SAP System. Please confirm this is flow-through information that does not need to be altered by the new "AET Toll Host" before transferring it to the PTC SAP System. Otherwise please identify what operations are to be performed and which numbered requirements in the RFP text apply.	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.
127	Exhibit A SOW Attachment 10, page 2 of 3, and Exhibit A SOW, Page 68 of 171	Exhibit A SOW Attachment 10, page 2 of 3, "System with Base Contract Only," and Exhibit A SOW, Reqts 538	Attachment 10, "System with Base Contract Only", and 2.2.6.1 Maintenance Online Management System (MOMS) – General Requirements, Reqts 538	"538 Provide a MOMS that interfaces with the Commission SAP to exchange work order creation and disposition data, and Equipment inventory data as defined during the Design phase." SOW Attachment 10 page 2 of 3 (System with Base Contract Only) does not show any interfaces from the contractors equipment to SAP, yet Req't 538 indicates that one is still needed. Please confirm that for the base proposal (System with Base Contract Only) the only portion of the Commission's	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.

#	Page	Section	Section Description	Proposer Question	Commission Response
				SAP system that the contractor must interact with is the Asset Management module under Logistics in SAP ECC 6.0.	
128	Exhibit A SOW, Attachment 10, page 2 of 3, and Exhibit A, and Exhibit A SOW, Page 68 of 171	Exhibit A SOW Attachment 10, page 2 of 3, and Exhibit A SOW, section 2.2.6.1, Reqts 538	Attachment 10, "System with Base Contract Only", and Exhibit A SOW, Reqts 538 under 2.2.6.1 Maintenance Online Management System (MOMS) – General Requirements	"538 Provide a MOMS that interfaces with the Commission SAP to exchange work order creation and disposition data, and Equipment inventory data as defined during the Design phase." Please confirm the level of interaction between third-party toll collection equipment deployed at PTCs other higher speed barrier AET lanes (cited on page 6 of 1050 in 100824.pdf) and PTC's SAP Asset Management function. In addition, please provide the ICD used for sending that data to PTC SAP so that a common set of interface assumptions can be used by all bidders responding to this RFP.	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.
129	Exhibit A SOW, Attachment 10 page 3 of 3, and Exhibit A SOW, page 64 of 171	Exhibit A SOW Attachment 10 and Exhibit A SOW, section 2.2.5.1, Reqts 511,512	Attachment 10, System with All Options Exercised, and 2.2.5.1 Cashless Toll Host System to SAP Interface (Optional), Reqts 511, 512	"511 The Contractor shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system." "512 The Contractor shall provide the capability to validate that the received files were successfully transmitted to SAP." SOW Attachment 10 page 3 of 3 (All Options Exercised) shows the new "AET Toll Host" passing data to PTC's SAP system but does not show any connection from the existing CSC/VPC Host to the PTC SAP system.	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.

#	Page	Section	Section Description	Proposer Question	Commission Response
				Please indicate if the existing CSC/PTC Host will be passing back any transactions to the new "AET Toll Host", for posting to PTC's SAP AR function, that during image review or customer service were ultimately assigned to a valid PTC transponder customer travelling through one of the three pairs of cashless toll zones identified in SOW Attachment 1.	
130	Exhibit A SOW, Attachment 10 page 3 of 3, and Exhibit A SOW, page 64 of 171	Exhibit A SOW Attachment 10 and Exhibit A SOW, section 2.2.5.1, Reqts 511,512	Attachment 10, System with All Options Exercised, and 2.2.5.1 Cashless Toll Host System to SAP Interface (Optional), Reqts 511, 512	"511 The Contractor shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system." "512 The Contractor shall provide the capability to validate that the received files were successfully transmitted to SAP." SOW Attachment 10 page 3 of 3 (System with All Options Exercised) shows the new "AET Toll Host" passing data to PTC's SAP system but does not show any connection from the existing CSC/VPC Host to the PTC SAP system. Please confirm that the new "AET Toll Host" will not be required to post any transactions to the PTC' SAP AR function (or any other GL function) that are from other PTC (Transcore or Xerox) toll zones not yet been converted to "cashless" operation. In other words, please confirm that if the CSC/PVC does send transactions back for posting to PTC's SAP, it will consistently send them back to the toll host they were received from. If that is not the case, please indicate the typical daily volumes	Confirmed, not posting and not handling any other facilities. Details of the interface to be determined in Design.

#	Page	Section	Section Description	Proposer Question	Commission Response
				for the additional transactions so that all bidders will be able to properly size the new "AET Toll Host".	
131	Exhibit A SOW, Attachment 10 page 3 of 3, and Exhibit A SOW, page 64 of 171	Exhibit A SOW Attachment 10 and Exhibit A SOW, section 2.2.5.1, Reqts 511,512	Attachment 10, System with All Options Exercised, and 2.2.5.1 Cashless Toll Host System to SAP Interface (Optional), Reqts 511, 512	"511 The Contractor shall design and develop an interface from the Cashless Toll Host System to SAP to transfer financial files received from the existing CSC/VPC system." "512 The Contractor shall provide the capability to validate that the received files were successfully transmitted to SAP." SOW Attachment 10 page 3 of 3 (System with All Options Exercised) shows the new "AET Toll Host" passing data to PTC's SAP system but does not show any connection from the existing CSC/VPC Host to the PTC SAP system. In order to permit all bidders to properly size the new "AET Toll Host" please indicate whether it will be required to post any transactions to the PTC' SAP AR function (or other GL function) that were obtained by the existing CSC/VPC from other E-ZPass agencies. If so, please indicate typical daily volumes for these transactions.	The Toll Host acts as a pass through. The Option to interface to SAP may be considered as part of the optional full build out to be defined during the Design phase.
132	RFP Sect 1.4, page 1 of 35	RFP Sect 1.4	Problem Statement	Please confirm that there are no geographic or jurisdictional restrictions on the physical location(s) that the contractor may select for the "Cashless Toll Host System" servers (per SOW Attachment 10 page 2 of 3 for System with Base Contract Only), or for the new "AET Toll Host" servers (per SOW Attachment 10 page 3 of 3 for System with All Options Exercised).	See Requirement #282

#	Page	Section	Section Description	Proposer Question	Commission Response
133	Exhibit G Draft Contract, section 29 Surety Bonds, Page 34 of 46	Exhibit G Draft Contract, section 29 Surety Bonds, Page 34 of 46	Exhibit G Draft Contract, section 29 Surety Bonds, Page 34 of 46	Our surety's preferred electronic vendors are Surety 2000 and SurePath. Are these two considered approved vendors, as required in this clause? If not, which ones do you consider approved electronic Performance Bond vendors?	See revisions to Exhibit G - Draft Contract section 29. Revision #3 in Addendum #2.
134	Exhibit G Draft Contract, section 2, starting from page 2 of 46	Exhibit G Draft Contract, section 2, starting from page 2 of 46	Exhibit G Draft Contract, section 2, starting from page 2 of 46	Would the Commission please define or quantify "perform to the Commission's satisfaction?"	See Section 2 of Exhibit G for definition.
135	Exhibit G Draft Contract, section 2, starting from page 2 of 46	Exhibit G Draft Contract, section 2, starting from page 2 of 46	Exhibit G Draft Contract, section 2, starting from page 2 of 46	Contract clause in question: "Inasmuch as these Services are provided for the convenience and benefit of the public, the CONTRACTOR acknowledges that the quality and timeliness of such Services are the essence of this Agreement." Question: This clause appears to allude to "time is of the essence," which is a legal term of art. How does this term relate to the Contractors right to cure in the event of an alleged default?	See Section 22 of Exhibit G.
136	Exhibit G Draft Contract, section 11.2, page 14 of 46	Exhibit G Draft Contract, section 11.2, page 14 of 46	Exhibit G Draft Contract, section 11.2, page 14 of 46	Will the Commission consider accommodating an extension from 10 to 30 days to permit the appropriate coordination of all key stakeholders in order to deliver a more accurate/detailed Project Implementation Schedule?	Revised to 15 days, see revision #2 in Addendum #2.
137	Exhibit G	Exhibit G Draft	Exhibit G Draft Contract,	Regarding "all implied warranties." Would the	See Section 16 of Exhibit G.

#	Page	Section	Section Description	Proposer Question	Commission Response
	Draft Contract, section 12, page 14 of 46	Contract, section 12, page 14 of 46	section 12, page 14 of 46	Commission be amenable to negotiating commercially reasonable warranties and excluding implied warranties in order to enable the contractor to more accurately and competitively price the overall effort?	
138	Exhibit G Draft Contract, section 13.1, starting from page 14 of 46	Exhibit G Draft Contract, section 13.1, starting from page 14 of 46	Exhibit G Draft Contract, section 13.1, starting from page 14 of 46	In this section and elsewhere throughout Exhibit G Draft Contract, it references both price and cost, and uses both terms interchangeably. Please define both.	Cost and price are synonymous in these instances. Both refer to a monetary amount.
139	Exhibit G Draft Contract, section 14, starting from page 16 of 46	Exhibit G Draft Contract, section 14, starting from page 16 of 46	Exhibit G Draft Contract, section 14, starting from page 16 of 46	Would the Commission be open to negotiating commercially reasonable terms related to section 14 of the draft contract?	See Section 1.19 of RFP.
140	Exhibit G Draft Contract, section 14.1 on page 16 of 46	Exhibit G Draft Contract, section 14.1 on page 16 of 46	Exhibit G Draft Contract, section 14.1 on page 16 of 46	Would the Commission be open to negotiating commercially reasonable licensing rights?	See Section 1.19 of RFP.
141	Exhibit G Draft Contract, section 15, pages 20-21 of 46	Exhibit G Draft Contract, section 15, pages 20-21 of 46	Exhibit G Draft Contract, section 15, pages 20-21 of 46	Our approach is based on the use of open source software licenses. Would the Commission consider negotiation of section 15 provisions around the use of open source licensing?	See Section 1.19 of RFP.

#	Page	Section	Section Description	Proposer Question	Commission Response
142	Exhibit G Draft Contract, section 16, starting from page 21 of 46	Exhibit G Draft Contract, section 16, starting from page 21 of 46	Exhibit G Draft Contract, section 16, starting from page 21 of 46	Would the commission be amenable to negotiating commercially reasonable warranty terms?	See Section 1.19 of RFP.
143	Exhibit G Draft Contract, section 16.2.4 on page 25 of 46	Exhibit G Draft Contract, section 16.2.4 on page 25 of 46	Exhibit G Draft Contract, section 16.2.4 on page 25 of 46	Please identify the concern that this provision is seeking to address. Would the Commission be amenable to negotiating commercially reasonable boundaries on this provision?	See Section 1.19 of RFP.
144	Exhibit G Draft Contract, starting from page 31 of 46	Exhibit G Draft Contract, section 24, starting from page 31 of 46	Exhibit G Draft Contract, section 24, starting from page 31 of 46	Would the Commission consider a commercially reasonable cap on liquidated damages?	Liquidated damages are based on good faith estimates of damages incurred.
145	Exhibit G Draft Contract, section 40 on page 38 of 46	Exhibit G Draft Contract, section 40 on page 38 of 46	Exhibit G Draft Contract, section 40 on page 38 of 46	Would the Commission consider limiting the scope of this clause to 2 years and project-related materials?	See retention definitions in Attachments 8A and 8B.
146	N/A	N/A	General Question, not tied to a particular section	With respect to the design locations that the PTC's civil designer is the lead on per the responsibility matrix, if possible, please provide the latest design drawings, so that we can begin to evaluate locations of equipment.	Design drawings will be available during coordination in Design. See Section 2.2.2, proposer is to provide information to support Commission design of infrastructure.

#	Page	Section	Section Description	Proposer Question	Commission Response
147	Exhibit A SOW, Section 2.2.1, Page 39 of 171	Exhibit A SOW, Section 2.2.1	Cashless Toll Host System - General Requirements	"282 The primary Cashless Toll Host System shall be installed in the PTC Data Center, a different physical location in the vicinity of the PTC Data Center, or a privately hosted Cloud location approved by the Commission" Please confirm the physical location of the PTC Data Center. Will the Contractor be permitted to select which location is used for the primary host? If not, please provide an assumption that can be consistently used by all bidders.	The PTC Data Center is located at the Pennsylvania Turnpike Commission - TIP Bldg 2850 Turnpike Industrial Park Middletown, PA 17057 See Requirement #282.
148	12 of 46	Exhibit G – 10.1.3.a	Final Acceptance of Implementation Phase	Is Exhibit G: Draft Contract, Section 10.1.3 (a) complete, or is there missing language?	See revision to section 10.1.3. Revision #4 in Addendum #2.
149	96 of 211	Addendum 1: 7.1.1 Hardware System Warranty Program	Req# 1002: The Hardware Warranty period for all Equipment furnished under this Contract except server Hardware shall be for a period of one (1) year, commencing on the date of Approved installations of each tolling location.	Please define “approved installation.”	Clarified in revision #10 in Addendum #2.
150	96 of 211	Addendum 1: 7.1.1 Hardware	Req# 1002: The Hardware Warranty period	Given that each tolling location would be installed on a different timeline, will there be effectively three warranty	Clarified in revision #10 in Addendum #2.

#	Page	Section	Section Description	Proposer Question	Commission Response
		System Warranty Program	for all Equipment furnished under this Contract except server Hardware shall be for a period of one (1) year, commencing on the date of Approved installations of each tolling location.	periods one for each Tolling Location?	
151	Attachment 8 –b	PTC Records Retention Schedule	General	The retention period, including growth requirements, for the storage of electronic toll collection data such as transactions, log files, LPICS images, DVAS video and data, is not detailed adequately within Attachment 8B PTC records Retention Schedule. Please provide the required details for the retention of all toll collection related data.	Details of archiving to be determined in Design. Contractor should assume archive data shall be retained for life of Contract and transferred to PTC at completion of Contract. See revision #6 in Addendum #2.
152	SOW 58 of 171	Dashboards	2.2.4.5 Requirement 453	Please provide the difference between “pictorial” view and “overview representation.”	Overview representation should display all the highways/facilities in a central view. The way the overview is displayed should be pictorial using icons or other visual images.
153	32 of 171	2.1.8 Digital Video Audit System (DVAS)	The DVAS cameras shall have pan-tilt-zoom (PTZ) functionality that allows Authorized Users to remotely control each camera. When no PTZ commands are received within a configurable time the DVAS cameras shall revert to their default	Based on prior experience, we see a potential problem with the use of PTZ DVAS cameras. Specifically, there is an opportunity for the camera to be moved away such that traffic is no longer visible, which in turn, prevents the DVAS from consistently providing the users with the video associated with each toll transaction. As a substitute, we recommend fixed cameras.	See Requirement #217.

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			settings. Alarm messages shall be generated and reported to the MOMS when remote controls are activated or settings other than the defaults are detected.		
154	80 of 171	Exhibit (A) 623 and Attachment 2 Responsibility Matrix item #2	The Contractor shall validate and approve the Commission and the civil contractor infrastructure installation and confirm they are in compliance with the Approved civil drawings.	Attachment 2 Responsibility Matrix, item #2 Toll Lanes Pavement /Roadway Infrastructure indicates the Toll System Contractor will have level B Support and Coordination responsibility yet the Comments box states the "Contractor approves the pavement design…". Does the Toll System Contractor have Approval responsibility or is it just B = support/coordination level responsibility?	Contractor approval requirements are listed in Attachment #2 within Scope of Work.
155	84 of 171	Exhibit (A) 648	The Contractor shall be responsible for all costs associated with any permits, etc.	For the purposes of planning or cost estimate: What if any permits will the Contractor be required to obtain on the Southern Beltway and the converted Findlay Connector?	See Requirement #648.
156	89 of 171	Section SOW 4.10	Lane Closure and Traffic Control Requirements and Conditions	Please define peak hours.	See Revision to text for requirement #676 in revision #8 in Addendum #2.
157	82 of 171	Section SOW 4.3.1	Construction Coordination with Infrastructure Contractors	Will the contractor be required to have personnel in the field during the civil construction to ensure that the installed roadway; infrastructure; structures/toll gantries; toll equipment building; UPS, and generators meet the Design requirements provided by the Contractor?	See Section 4.3.1 of Scope of Work for coordination requirements.

#	Page	Section	Section Description	Proposer Question	Commission Response
158	19 of 171	2.1.5.4	Optical Character Recognition (OCR)/ Automatic License Plate Recognition (ALPR) – Optional	Requirement 110 states: For audit and Maintenance purposes, Authorized Users shall have the capability to view all the images in real time on any device connected to the Cashless Tolling System network and verify the OCR/ALPR performance. Can the word "device" here be defined as networked computers with monitors and login capabilities? Can the phrase "all the images" here be defined as all images that have been transmitted to the Cashless Toll Host System?	Yes, but not limited to. Yes.
159	19 of 171	2.1.5.4	Optical Character Recognition (OCR)/ Automatic License Plate Recognition (ALPR) – Optional	Requirement 112 states: "All data entered through the independent image review process for testing and audit described above shall be saved separate from the normal production environment and shall be available to Authorized Users through reports." How long is this data required to be stored?	Until the audit process is deemed complete, details to be confirmed in Design.
160	71 of 171	2.3	Test Site	Is the Test Site envisioned to be installed on Contractor-owned property or Commission-owned property? Is this assumed to be the Harrisburg test site?	It will be a Contractor provided facility, see revision #7 in Addendum #2. No.
161	133 of 171	6.2	Factory Acceptance Test (FAT)	Does the FAT test site in requirement 964 refer to the same Test Site described in section 2.3?	Yes.

#	Page	Section	Section Description	Proposer Question	Commission Response
162	133 of 171	6.2	Factory Acceptance Test (FAT)	The requirement states: "The FAT test site shall remain available through throughout the term of the Contract for testing and validating changes, fixes and enhancements to the Cashless Tolling Hardware and Software" Must the PTC Cashless Tolling Software be installed continuously at the FAT test site, or is it sufficient that it is available to be installed when validation of changes, fixes and enhancements is needed?	See Requirement #964.
163	72 of 171	2.5.1.1	General Requirements	Does the "Image Capture Rate" in requirement 570 refer to the same value as the "Image Capture Reporting Accuracy" defined in section 2.5.1.8, requirement 508?	Yes, however Requirement #570 and 580 are the applicable requirements, not 570 and 508.
164	Req 787	5.4 Documentation	General Requirements	With three iterations of Document submissions to client, and contractor preparation and subsequent review of deliverables, Exhibit E schedule allows for three months to complete requirements, design reviews, workshops and document submittals. Is the timeframe flexible?	See revised implementation schedule revision #11 in Addendum #1.
165	Exhibit F7	1 Project Summary	Optional Pricing	Please clarify if the Optional maintenance phases, optional facilities, and optional system implementation costs are evaluated as part of the proposal and what weight they will be given in relation to base scope costs.	The price proposal will be evaluated as a whole. See section 3.4.
166	47 of 171	Section 2.2.3	Requirement : 346	Please provide the Interface Control Document (ICD) for	To be provided in Design.

#	Page	Section	Section Description	Proposer Question	Commission Response
				the Customer Service Center (CSC)/ Violations Processing Center (VPC).	
167	47 of 171	Section 2.2.3	Requirement : 346	Please provide the ICD for the PTC Toll Host.	To be provided in Design.
168	47 of 171	Section 2.2.3	Requirement : 346	Please provide the ICD for the PTC Image servers.	The Cashless Toll System will not interface to existing PTC image servers. Image servers provided as part of the Cashless Tolling solution will be provided by the Contractor.
169	47 of 171	Section 2.2.3	Requirement : 346	Please provide the ICD for the PTC monitoring services at PTC data center.	To be provided in Design.
170	18 of 171	Section 2.1.5.3	Requirement : 99	Is it acceptable for the PTC to store compressed images at the Cashless toll host level for image review purposes in order to reduce storage and network bandwidth requirements?	The images transferred to the existing CSC/VPC system shall include, at a minimum, the front and rear full uncompressed image(s) and the ROI. Images that have been successfully transmitted to the CSC (with acknowledgment receipt) can be stored in a compressed format at the Cashless Toll Host.
171	20 of 171	Section 2.1.6	Requirement : 116	Does the PTC provide external systems to transmit HOT list alerts originated at the Cashless Toll Host or Tolling Zone?	There is no HOT list defined in PTC.
172	22 of 172	3.4 Evaluation Criteria	6.0 Price – While this area may be weighted heavily, it will not normally be the deciding factor in the selection process. The	Pricing Scoring / Evaluation – Will the Commission score the base system costs and well as the optional system costs together as a whole, or separately?	The price proposal will be evaluated as a whole. See section 3.4.

#	Page	Section	Section Description	Proposer Question	Commission Response
			Commission reserves the right to select a Proposal based upon all the factors listed above, and will not necessarily choose the firm offering the best price.		

All other terms, conditions and requirements of the original RFP dated February 17, 2016 and Addendum No. 1 remain unchanged unless modified by this Addendum.

Toll Zone Types

For the purpose of developing cost estimates for roadside equipment, it is important to understand physical layout of the future Cashless Tolling System. Specifically, the number of lanes and shoulders, as well as the type of toll zone (gantry structure or spaceframe structure) being implemented will be important to the cost estimates.

Shoulders of 8 feet or greater were considered full shoulders and will, thereby, be fully equipped. Table 1 describes the toll zone types found across the system.

Table 2 describes the location and type for the two toll zones which will be constructed on the baseline scope facility (Findlay Connector/Southern Beltway).

Toll zone layouts have not been developed for the optional facilities (Mainline , Northeastern Extension, Beaver Valley Expressway, Amos. K. Hutchinson Bypass and Mon-Fayette Expressway). Therefore, cost estimates are requested for each toll zone type so that costs may be fully developed in coordination with the design of these facilities.

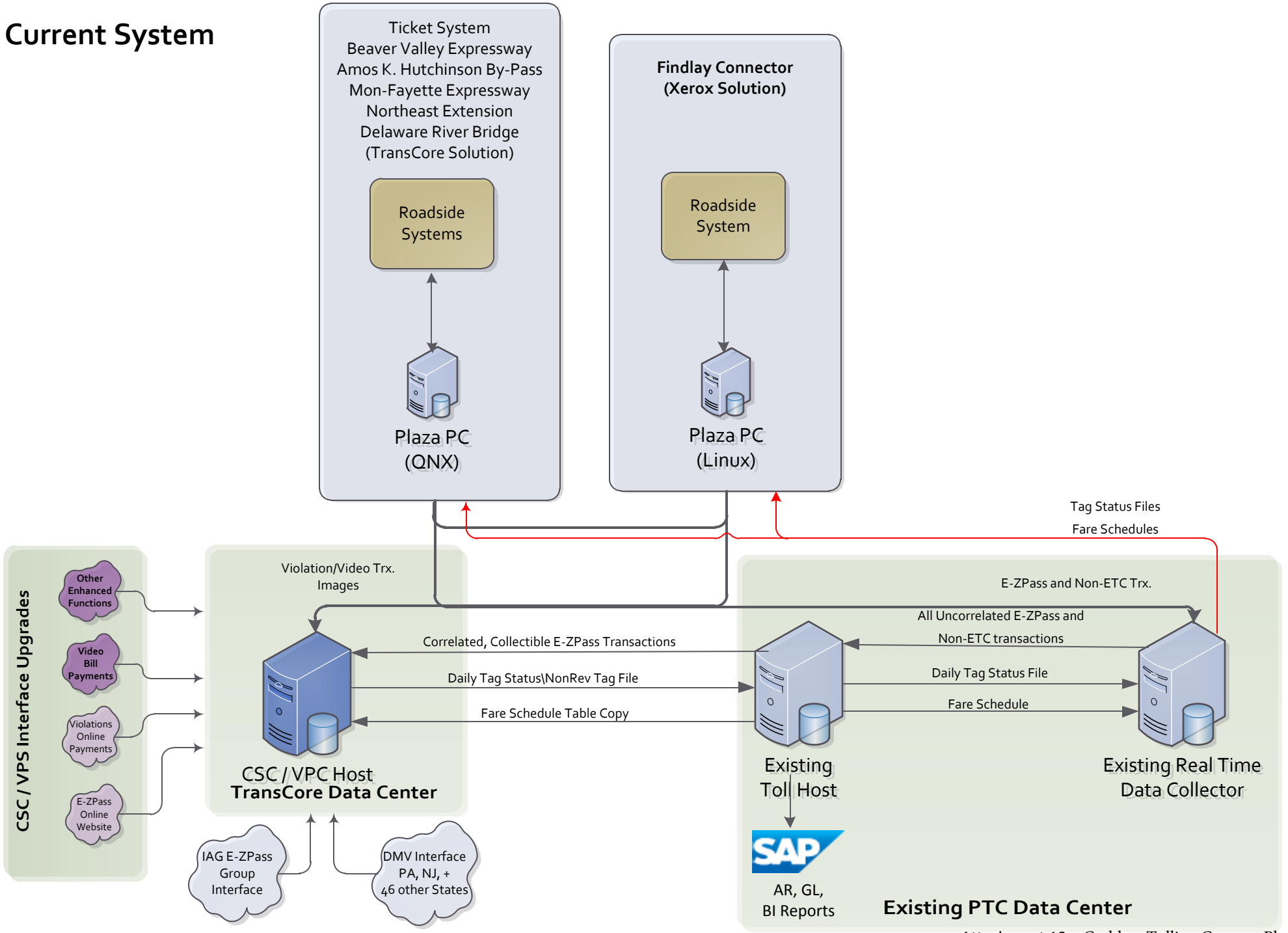
Table 1: Summary of Toll Zone Types

Toll Zone Type	Description	Existing Lane Configuration (lanes+full shoulder+partial shoulder)
Zone Type 1 (Z 1)	Mainline Gantry with Maintenance from Above	(3+1+1)
Zone Type 2 (Z 2)	Mainline Gantry with Maintenance from Above	(3+2+0)
Zone Type 3 (Z 3)	Mainline Gantry with Maintenance from Above	(2+1+1)
Zone Type 4 (Z 4)	Mainline Gantry with Maintenance from Above	(2+2+0)
Zone Type 5 (Z 5)	Spaceframe with Maintenance from Below	(2+1+1)
Zone Type 6 (Z 6)	Spaceframe with Maintenance from Below	(3+1+1)
Zone Type 7 (Z 7)	Spaceframe with Maintenance from Below	(2+2+0)

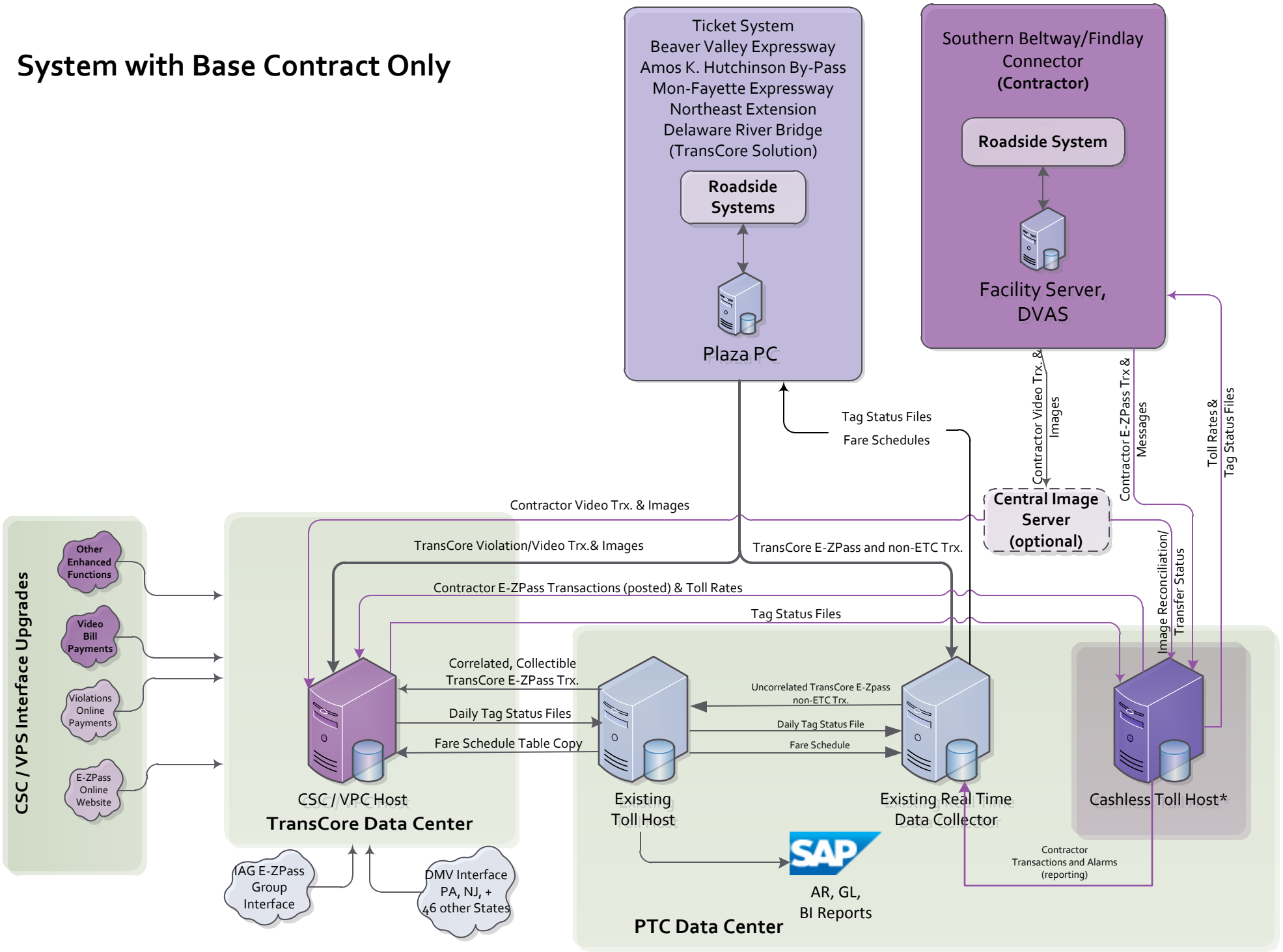
Table 2: Toll Zone Details for Southern Beltway/Findlay Connector

Location	Toll Zone Type
Findlay Connector MP 2.6	Zone Type 7
Southern Beltway Station 438+00	Zone Type 7
Southern Beltway Station 840+00	Zone Type 7

Current System

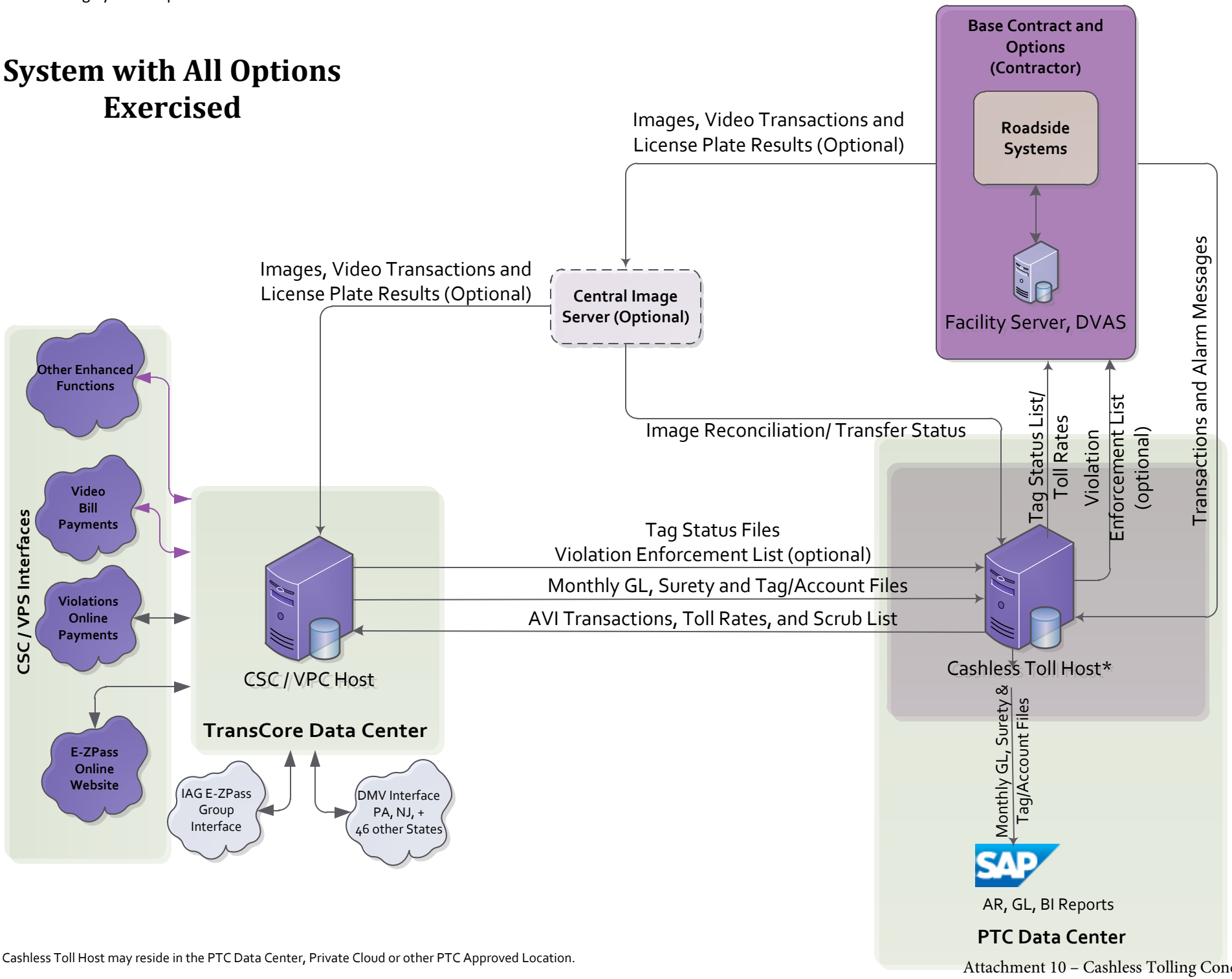


System with Base Contract Only



* Cashless Toll Host may reside in the PTC Data Center, Private Cloud or other PTC Approved Location.

System with All Options Exercised



* Cashless Toll Host may reside in the PTC Data Center, Private Cloud or other PTC Approved Location.

Sheet 1
PTC Cashless Tolling System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

	Base Contract Cost ($)	Optional Future Facilities Cost ($)	Grand Total Cost ($)
Implementation Phase			
In-lane System Cost (Sheet 2/Sheet 6)	$ -	$ -	$ -
Toll Host/System Cost (Sheet 3/Sheet 6)	$ -	$ -	$ -
Total Implementation Phase	$ -	$ -	$ -
Maintenance Phase			
In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Maintenance Phase	$ -	$ -	$ -
Optional Functionality			
In-lane OCR/ALPR and Enforcement Notification Pricing (Sheet 2/Sheet 6)	$ -	$ -	$ -
Total Optional Functionality	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY	$ -	$ -	$ -
Optional Extension Phase			
Extension #1 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #1 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Extension #2 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #2 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Optional Extension Phases	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL EXTENSION PHASES	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY AND OPTIONAL EXTENSION PHASES	$ -	$ -	$ -

Grand Total Dollars

Officer Signature

Date

Typed Name, Title, Address and Phone Number

Sheet 2
Base and Optional In-lane System Cost by Roadway
(Summary Only - No Proposer Input Required)

Highway	Planned Go-Live Date	Toll Zone Type	Total # of Toll Zones	Cost Per Toll Zone ($)	Total Cost Toll Zones ($)
Base Contract					
Findlay Connector	Q1 2018	Location TBD	2	$ -	$ -
		Facility Server			$ -
Southern Beltway	Q4 2019	Location TBD	4	$ -	$ -
Total Base Contract			6		$ -
Optional OCR/ALPR and Enforcement Notification					
Findlay Connector	Q1 2018				$ -
Southern Beltway	Q4 2019				$ -
Total Optional OCR/ALPR and Enforcement Notification					$ -

Sheet 3
Toll Host/System Cost
(Summary Only - No Proposer Input Required)

Item #	Description	Unit	Total Cost ($)
1	System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered	LS	$ -
2	Communications Equipment	LS	$ -
3	Zone Controller Software Costs	LS	$ -
4	Software (GUI, Back-end), Host System, MOMS, DVAS and License	LS	$ -
5	Design Documentation	LS	$ -
6	User, Maintenance, and Project Documentation	LS	$ -
7	Training (manuals, materials and delivery)	LS	$ -
8	Factory Acceptance Test	LS	$ -
9	On-Site First Installation Test	LS	$ -
10	Installation and Commissioning Test	LS	$ -
11	System Operational and Acceptance Test	LS	$ -
12	Third Party Warranty and Licenses	LS	$ -
13	Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services	LS	$ -
14	Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services	LS	$ -
15	Spare Parts and Equipment Year 1 - Warranty Year	LS	$ -
16	Insurance and Bonding	LS	$ -
17	Project Management	LS	$ -
18	Engineering and Design	LS	$ -
19	Transition Costs	LS	$ -
	Total Toll Host/System Costs		$ -

Sheet 4
Base and Optional
In-Lane System Hardware Maintenance and Software Support Services Cost
(Summary Only - No Proposer Input Required)

Item #	Description of Items	Total Annual Cost ($)	
	Base Contract Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	See Note #1
2	Year 2 of Maintenance	$ -	
3	Year 3 of Maintenance	$ -	
4	Year 4 of Maintenance	$ -	
5	Year 5 of Maintenance	$ -	
6	Year 6 of Maintenance	$ -	
7	Year 7 of Maintenance	$ -	
8	Year 8 of Maintenance	$ -	
9	Year 9 of Maintenance	$ -	
	Total In-Lane System Hardware Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2 - 9)	$ -	
	Optional Extension 1 Costs		
10	Extension 1 - Year 1 of Maintenance	$ -	
11	Extension 1 - Year 2 of Maintenance	$ -	
12	Extension 1 - Year 3 of Maintenance	$ -	
13	Extension 1 - Year 4 of Maintenance	$ -	
14	Extension 1 - Year 5 of Maintenance	$ -	
	Total Extension 1 Cost	$ -	
	Optional Extension 2 Costs		
15	Extension 2 - Year 1 of Maintenance	$ -	
16	Extension 2 - Year 2 of Maintenance	$ -	
17	Extension 2 - Year 3 of Maintenance	$ -	
18	Extension 2 - Year 4 of Maintenance	$ -	
19	Extension 2 - Year 5 of Maintenance	$ -	
	Total Extension 2 Cost	$ -	
Total Base and Optional In-Lane System Hardware Maintenance and Software Support Services (excluding Warranty)		$ -	

Note 1: Year 1 of Maintenance Total carried forward to Sheet 3 - In-Lane System Hardware Maintenance and Software Support Services. Not included in the total of Sheet 4.

Sheet 5
Base and Optional
Toll Host/System Maintenance and Software Support Services Cost
(Summary Only - No Proposer Input Required)

Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)	
	Base Contract Maintenance Costs			
1	Year 1 of Maintenance (Warranty)	$ -	$ -	See Note #1
2	Year 2 of Maintenance	$ -	$ -	
3	Year 3 of Maintenance	$ -	$ -	
4	Year 4 of Maintenance	$ -	$ -	
5	Year 5 of Maintenance	$ -	$ -	
6	Year 6 of Maintenance	$ -	$ -	
7	Year 7 of Maintenance	$ -	$ -	
8	Year 8 of Maintenance	$ -	$ -	
9	Year 9 of Maintenance	$ -	$ -	
	Total Toll Host/System Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2-9)		$ -	
	Optional Extension 1 Costs			
10	Extension 1 - Year 1 of Maintenance	$ -	$ -	
11	Extension 1 - Year 2 of Maintenance	$ -	$ -	
12	Extension 1 - Year 3 of Maintenance	$ -	$ -	
13	Extension 1 - Year 4 of Maintenance	$ -	$ -	
14	Extension 1 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 1 Cost		$ -	
	Optional Extension 2 Costs			
15	Extension 2 - Year 1 of Maintenance	$ -	$ -	
16	Extension 2 - Year 2 of Maintenance	$ -	$ -	
17	Extension 2 - Year 3 of Maintenance	$ -	$ -	
18	Extension 2 - Year 4 of Maintenance	$ -	$ -	
19	Extension 2 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 2 Cost		$ -	
Total Base and Optional Toll Host/System Maintenance and Software Support Services (excluding Warranty)			$ -	

Note 1: Year One of Maintenance Total carried forward to Sheet 3 - Toll Host/System Maintenance and Software Support Services. Not included in the total of Sheet 5.

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future System Implementation Cost		
Item #	Description of Items	Total Annual Cost ($)
	Future In-Lane System Cost (by Zone Type)	
1	Zone Type 1 (3+1+1)	$ -
2	Zone Type 2 (3+2+0)	$ -
3	Zone Type 3 (2+1+1)	$ -
4	Zone Type 4 (2+2+0)	$ -
5	Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -
6	Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -
7	Host Cost	$ -
8	Facility Server	$ -
9	Optional OCR/ALPR and Enforcement Notification	$ -
	Total Future System Implementation Cost	$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future In-Lane System Hardware Maintenance and Software Support Services Cost Summary		
Item #	Description of Items	Total Annual Cost ($)
	Maintenance Costs	
1	Year 1 of Maintenance (Warranty)	$ -
2	Year 2 of Maintenance	$ -
3	Year 3 of Maintenance	$ -
4	Year 4 of Maintenance	$ -
5	Year 5 of Maintenance	$ -
6	Year 6 of Maintenance	$ -
	Total Future In-Lane System Hardware Maintenance and Software Support Services Cost (Maintenance Years 1 - 6)	$ -
	Optional Extension 1 Costs	
7	Extension 1 - Year 1 of Maintenance	$ -
8	Extension 1 - Year 2 of Maintenance	$ -
9	Extension 1 - Year 3 of Maintenance	$ -
10	Extension 1 - Year 4 of Maintenance	$ -
11	Extension 1 - Year 5 of Maintenance	$ -
	Total Extension 1 Cost	$ -
	Optional Extension 2 Costs	
12	Extension 2 - Year 1 of Maintenance	$ -
13	Extension 2 - Year 2 of Maintenance	$ -
14	Extension 2 - Year 3 of Maintenance	$ -
15	Extension 2 - Year 4 of Maintenance	$ -
16	Extension 2 - Year 5 of Maintenance	$ -
	Total Extension 2 Cost	$ -
Total Future In-Lane System Hardware Maintenance and Software Support Services		$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future Toll Host/System Maintenance and Software Support Services Cost Summary			
Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)
	Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	$ -
2	Year 2 of Maintenance	$ -	$ -
3	Year 3 of Maintenance	$ -	$ -
4	Year 4 of Maintenance	$ -	$ -
5	Year 5 of Maintenance	$ -	$ -
6	Year 6 of Maintenance	$ -	$ -
	Total Future Toll Host/System Maintenance and Software Support Services Cost (Maintenance Years 1-6)		$ -
	Optional Extension 1 Costs		
7	Extension 1 - Year 1 of Maintenance	$ -	$ -
8	Extension 1 - Year 2 of Maintenance	$ -	$ -
9	Extension 1 - Year 3 of Maintenance	$ -	$ -
10	Extension 1 - Year 4 of Maintenance	$ -	$ -
11	Extension 1 - Year 5 of Maintenance	$ -	$ -
	Total Extension 1 Cost		$ -
	Optional Extension 2 Costs		
12	Extension 2 - Year 1 of Maintenance	$ -	$ -
13	Extension 2 - Year 2 of Maintenance	$ -	$ -
14	Extension 2 - Year 3 of Maintenance	$ -	$ -
15	Extension 2 - Year 4 of Maintenance	$ -	$ -
16	Extension 2 - Year 5 of Maintenance	$ -	$ -
	Total Extension 2 Cost		$ -
	Total Future Toll Host/System Maintenance and Software Support Services		$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Zone Type 7 (2+2+0) Space Frame with Maint Below					
1. Redundant Toll Zone Controller and In-lane Electronics[1]					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -	$ -	$ -
2. AVI System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVI System			$ -	$ -	$ -
3. AVC System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVC System			$ -	$ -	$ -
4. LPICPS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total LPICPS			$ -	$ -	$ -
5. Communications Equipment					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
6. Equipment Racks					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Equipment Racks			$ -	$ -	$ -
7. DVAS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total DVAS			$ -	$ -	$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
8. Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Commissioning Test			$ -	$ -	$ -
Total			$ -	$ -	$ -
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Facility Server			$ -	$ -	$ -
Total with Facility Server			$ -	$ -	$ -
Labor Check (from Sheet 2-2, cell F50) should equal cell E77				$ -	
Optional OCR/ALPR and Enforcement Notification Findlay Connector					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification Southern Beltway					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -

Note 1: All hardware/software provided under this Contract should be included in these costs.
Note 2: Use the additional rows as needed to itemize each components
Note 3: All roadways are current Year Cost.
Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.
Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work
Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 2-2 Back-up
In-Lane System - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			In-Lane Cost		
			Rate	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
1 System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered					
Host Servers - equipment, purchase, install, configure and test	0	$ -	$ -	$ -	$ -
Storage Works	0	$ -	$ -	$ -	$ -
Back-up Library	0	$ -	$ -	$ -	$ -
Other Third-party Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Hardware, Third Party SW and Installation not Otherwise Covered			$ -	$ -	$ -
2 Communications Equipment					
Switches	0	$ -	$ -	$ -	$ -
LAN HW	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
3 Zone Controller Software Costs					
Zone Controller Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Zone Controller Software Costs			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
4 Software (GUI, Back-end), Host System, MOMS, DVAS and License					
Host Software	0	$ -	$ -	$ -	$ -
MOMS	0	$ -	$ -	$ -	$ -
DVAS	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Software (GUI, Back-end), Host System, MOMS, DVAS and License			$ -	$ -	$ -
5 Design Documentation					
Lane Drawings	0	$ -	$ -	$ -	$ -
SDDD	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Design Documentation			$ -	$ -	$ -
6 User, Maintenance, and Project Documentation					
Documents/Manuals	0	$ -	$ -	$ -	$ -
Maintenance Manual	0	$ -	$ -	$ -	$ -
Installation Manual	0	$ -	$ -	$ -	$ -
Project Plans	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total User, Maintenance and Project Documentation			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
7 Training (manuals, materials and delivery)					
Maintenance Training	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Training			$ -	$ -	$ -
8 Factory Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Factory Acceptance Test			$ -	$ -	$ -
9 On-Site First Installation Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total On-Site First Installation Test			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
10 Installation and Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Installation and Commissioning Test			$ -	$ -	$ -
11 System Operational and Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Operational and Acceptance Test			$ -	$ -	$ -
12 Third Party Warranty and Licenses					
DB Licenses	0	$ -	$ -	$ -	$ -
OS Licenses	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Third Party Warranty and Licenses			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
13 Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services					
Year 1 Warranty (from sheet 4)					$ -
Total Warranty First Year of Operation - In-Lane System Maintenance and Software Support Services					$ -
14 Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					
Year 1 Warranty (from sheet 5)					$ -
Total Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					$ -
15 Spare Parts and Equipment Year 1 - Warranty Year					
Spare Year 1 (From Sheet 3-2) In-Lane Spares					$ -
Spare Year 1 (From Sheet 3-2) Host System Spares					$ -
Total Spare Parts and Equipment Year 1 - Warranty Year					$ -
16 Insurance and Bonding					
Insurance and Bonding	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Insurance and Bonding			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
17 Project Management					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Project Management			$ -	$ -	$ -
18 Engineering and Design					
Lane Installation Design Drawings	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Engineering and Design			$ -	$ -	$ -
19 Transition Costs					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Transition Costs			$ -	$ -	$ -
Total Host/System Costs			$ -	$ -	$ -
Labor Check (from Sheet 3-3, cell F50) should equal cell F174				$ -	

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
In-Lane Spares (All Roadways)	Year 1 - Warranty Year		
1. Redundant Toll Zone Controller and In-lane Electronics[1]			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Serial Controllers	0	$ -	$ -
Power Supply	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -
2. AVI System			
AVI Reader Modules	0	$ -	$ -
AVI Antennas	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVI System			$ -
3. AVC System			
Primary AVDC Sensor	0	$ -	$ -
AVDC Detector Cards	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVC System			$ -
4. LPICPS			
Front Cameras	0	$ -	$ -
Rear Cameras	0	$ -	$ -
Illuminators	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total LPICPS			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
5. Communications Equipment			
Switches	0	$ -	$ -
Power Supply	0	$ -	$ -
Router	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
6. Equipment Racks			
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Equipment Racks			$ -
7. DVAS			
Cameras	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total DVAS			$ -
Spare Cost Warranty Year (Year 1) In-Lane System			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
Toll Host/System Spares Cost	Year 1 - Warranty Year		
1. System Hardware			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Miscellaneous	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total System Hardware			$ -
2. Communications Equipment			
LAN Equipment	0	$ -	$ -
Power Supply	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
Spare Cost Warranty Year (Year 1) Toll Host/System			$ -
Total Spare Cost Warranty Year (Year 1) In-Lane and Toll Host/System			$ -

Sheet 3-3 Back-up
Toll Host/System -
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			Toll Host/System Costs		
			Rate	Hours	Total System Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs - Southern Beltway				
Total Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	2	12	$ -
Total Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	2	12	$ -
Total Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 6 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 7 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 8 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 9 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 4-2 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Year 7 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 7	$ -
Year 8 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 8	$ -
Year 9 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 9	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Year 8 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Year 8 Rate	Year 8 Hours	Year 8 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 9 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 9 Rate	Year 9 Hours	Year 9 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 7 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 7 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 8 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 8 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 9 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 9 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Year 8 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Year 8 Rate	Year 8 Hours	Year 8 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 9 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 9 Rate	Year 9 Hours	Year 9 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 1 Quantity	Year 1 Unit Evaluation Cost including Labor	Year 1 Total Evaluation Cost	Year 2 Quantity	Year 2 Unit Evaluation Cost including Labor	Year 2 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						
Zone Type 2 (3+2+0)	$ -	$ -						
Zone Type 3 (2+1+1)	$ -	$ -						
Zone Type 4 (2+2+0)	$ -	$ -						
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						
Estimated Zones Ordered/Costs								
Estimated Zones Ordered/Costs Volume Discount								
Estimated Zones Ordered/Costs (less volume discount)								
Incremental Host Cost (based on zone quantity)								
Facility Server (if applicable)	$ -	$ -						
Estimated Incremental Host Cost and Facility Server Cost								
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -						
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)		3.0%	Year 3	Year 3	Year 3	Year 4	Year 4	Year 4
	2016 Values for Other Direct Cost	2016 Labor	Quantity	Unit Evaluation Cost including Labor	Total Evaluation Cost	Quantity	Unit Evaluation Cost including Labor	Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -				14	$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -				6	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				4	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)		3.0%	Year 5	Year 5	Year 5	Year 6	Year 6	Year 6
	2016 Values for Other Direct Cost	2016 Labor	Quantity	Unit Evaluation Cost including Labor	Total Evaluation Cost	Quantity	Unit Evaluation Cost including Labor	Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				8	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -				14	$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 7 Quantity	Year 7 Unit Evaluation Cost including Labor	Year 7 Total Evaluation Cost	Year 8 Quantity	Year 8 Unit Evaluation Cost including Labor	Year 8 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				20	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				6	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						28		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)								
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 9 Quantity	Year 9 Unit Evaluation Cost including Labor	Year 9 Total Evaluation Cost	Year 10 Quantity	Year 10 Unit Evaluation Cost including Labor	Year 10 Total Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost less discount by Zone Type
Zone Type 1 (3+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -	40	$ -	$ -				$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -	2	$ -	$ -				$ -	$ -
Estimated Zones Ordered/Costs			42		$ -				$ -	
Estimated Zones Ordered/Costs Volume Discount					$ -				$ -	
Estimated Zones Ordered/Costs (less volume discount)					$ -				$ -	
Incremental Host Cost (based on zone quantity)					$ -				$ -	
Facility Server (if applicable)	$ -	$ -	3	$ -	$ -				$ -	
Estimated Incremental Host Cost and Facility Server Cost					$ -				$ -	
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs					$ -				$ -	
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -		$ -	$ -				$ -	
Volume Discount by Zone Quantity:										
Volume Discount for 10- 19 Zones	0.00%									
Volume Discount for 20- 29 Zones	0.00%									
Volume Discount for 30- 39 Zones	0.00%									
Volume Discount for over 40 Zones	0.00%									

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
	2016 Values		
Zone Type 1 (3+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 2 (3+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 3 (2+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 4 (2+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
Zone Type 6 (3+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL UNIT ($)	LABOR ($)	TOTAL COST ($)
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Host Cost (if applicable) Lump Sum for First Year of Implementation			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Per Zone Cost (if applicable)			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -

Note 1: All costs are current Year Cost.

Note 2: All hardware/software provided under this Contract should be included in these costs.

Note 3: All roadways are current Year Cost.

Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.

Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work

Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			2016 Loaded Labor Rate	Zone Type 1 (3+1+1)		Zone Type 2 (3+2+0)	
				2016 Values		2016 Values	
				Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -	0	$ -
2		Project Manager	$ -	0	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	0	$ -
23		Software Architect	$ -	0	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	0	$ -
26		Software Lead	$ -	0	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	0	$ -
30		System Administrator	$ -	0	$ -	0	$ -
31		System Analyst	$ -	0	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	0	$ -
33			$ -	0	$ -	0	$ -
34			$ -	0	$ -	0	$ -
35			$ -	0	$ -	0	$ -
36			$ -	0	$ -	0	$ -
37			$ -	0	$ -	0	$ -
38			$ -	0	$ -	0	$ -
39			$ -	0	$ -	0	$ -
40			$ -	0	$ -	0	$ -
41			$ -	0	$ -	0	$ -
42			$ -	0	$ -	0	$ -
43			$ -	0	$ -	0	$ -
44			$ -	0	$ -	0	$ -
	Total Labor Cost				$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			Zone Type 3 (2+1+1)		Zone Type 4 (2+2+0)	
			2016 Values		2016 Values	
			Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	0	$ -	0	$ -
2		Project Manager	0	$ -	0	$ -
3		Technical /Software Development Manager	0	$ -	0	$ -
4		Lane Technical Lead	0	$ -	0	$ -
5		Installation Manager	0	$ -	0	$ -
6		Maintenance Manager	0	$ -	0	$ -
7		Quality Assurance/Test Manager	0	$ -	0	$ -
8		CADD Technician	0	$ -	0	$ -
9		Database Analyst	0	$ -	0	$ -
10		Deputy Project Manager	0	$ -	0	$ -
11		Electrician Helper	0	$ -	0	$ -
12		Hardware Engineer/Lead	0	$ -	0	$ -
13		Installation Supervisor	0	$ -	0	$ -
14		Installation Technician	0	$ -	0	$ -
15		Licensed Electrical Engineer	0	$ -	0	$ -
16		Licensed Electrician	0	$ -	0	$ -
17		Maintenance Manager	0	$ -	0	$ -
18		Maintenance Supervisor	0	$ -	0	$ -
19		Maintenance Technician	0	$ -	0	$ -
20		Network Administrator	0	$ -	0	$ -
21		Network Engineer	0	$ -	0	$ -
22		Senior Maintenance Technician	0	$ -	0	$ -
23		Software Architect	0	$ -	0	$ -
24		Software Development Engineer	0	$ -	0	$ -
25		Software Development Manager	0	$ -	0	$ -
26		Software Lead	0	$ -	0	$ -
27		Software Programmer I	0	$ -	0	$ -
28		Software Programmer II	0	$ -	0	$ -
29		Software Programmer III	0	$ -	0	$ -
30		System Administrator	0	$ -	0	$ -
31		System Analyst	0	$ -	0	$ -
32		Technical Writer	0	$ -	0	$ -
33			0	$ -	0	$ -
34			0	$ -	0	$ -
35			0	$ -	0	$ -
36			0	$ -	0	$ -
37			0	$ -	0	$ -
38			0	$ -	0	$ -
39			0	$ -	0	$ -
40			0	$ -	0	$ -
41			0	$ -	0	$ -
42			0	$ -	0	$ -
43			0	$ -	0	$ -
44			0	$ -	0	$ -
	Total Labor Cost			$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be ma
Maintenance Cost based on actual CPI change for the previous year as further describe
Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page v

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			Zone Type 5 (2+1+1) Space Frame with Maint Below		Zone Type 6 (3+1+1) Space Frame with Maint Below	
			2016 Values		2016 Values	
			Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	0	$ -	0	$ -
2		Project Manager	0	$ -	0	$ -
3		Technical /Software Development Manager	0	$ -	0	$ -
4		Lane Technical Lead	0	$ -	0	$ -
5		Installation Manager	0	$ -	0	$ -
6		Maintenance Manager	0	$ -	0	$ -
7		Quality Assurance/Test Manager	0	$ -	0	$ -
8		CADD Technician	0	$ -	0	$ -
9		Database Analyst	0	$ -	0	$ -
10		Deputy Project Manager	0	$ -	0	$ -
11		Electrician Helper	0	$ -	0	$ -
12		Hardware Engineer/Lead	0	$ -	0	$ -
13		Installation Supervisor	0	$ -	0	$ -
14		Installation Technician	0	$ -	0	$ -
15		Licensed Electrical Engineer	0	$ -	0	$ -
16		Licensed Electrician	0	$ -	0	$ -
17		Maintenance Manager	0	$ -	0	$ -
18		Maintenance Supervisor	0	$ -	0	$ -
19		Maintenance Technician	0	$ -	0	$ -
20		Network Administrator	0	$ -	0	$ -
21		Network Engineer	0	$ -	0	$ -
22		Senior Maintenance Technician	0	$ -	0	$ -
23		Software Architect	0	$ -	0	$ -
24		Software Development Engineer	0	$ -	0	$ -
25		Software Development Manager	0	$ -	0	$ -
26		Software Lead	0	$ -	0	$ -
27		Software Programmer I	0	$ -	0	$ -
28		Software Programmer II	0	$ -	0	$ -
29		Software Programmer III	0	$ -	0	$ -
30		System Administrator	0	$ -	0	$ -
31		System Analyst	0	$ -	0	$ -
32		Technical Writer	0	$ -	0	$ -
33			0	$ -	0	$ -
34			0	$ -	0	$ -
35			0	$ -	0	$ -
36			0	$ -	0	$ -
37			0	$ -	0	$ -
38			0	$ -	0	$ -
39			0	$ -	0	$ -
40			0	$ -	0	$ -
41			0	$ -	0	$ -
42			0	$ -	0	$ -
43			0	$ -	0	$ -
44			0	$ -	0	$ -
	Total Labor Cost			$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be ma
Maintenance Cost based on actual CPI change for the previous year as further describe
Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page v

Sheet 6-4 Back-up
Optional Incremental Host System Cost
(2016 Values)

DESCRIPTION OF ITEMS	PER ZONE COST ($)
Incremental Host System Cost Per Zone (1 - 9 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (1-9 Zones)	$ -
Incremental Host System Cost Per Zone (10 - 19 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (10-19 Zones)	$ -
Incremental Host System Cost Per Zone (20 - 29 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (20-29 Zones)	$ -
Incremental Host System Cost Per Zone (30 - 39 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (30-39 Zones)	$ -
Incremental Host System Cost Per Zone (40 or more Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (40 or more Zones)	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs				
Year 1 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 2 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 3 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 4 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 5 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	76	12	$ -
Year 6 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Future Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 1		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 2			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 7-1
Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
CADD Technician	$ -
Database Administrator	$ -
Database Analyst	$ -
Deputy Project Manager	$ -
Electrician Helper	$ -
Finance Manager (Design/Implementation)	$ -
Finance Manager (Operations)	$ -
Hardware Engineer/Lead	$ -
Host Technical Lead	$ -
Installation Manager	$ -
Installation Supervisor	$ -
Installation Technician	$ -
Lane Technical Lead	$ -
Licensed Electrical Engineer	$ -
Licensed Electrician	$ -
Maintenance Manager	$ -
Maintenance Supervisor	$ -
Maintenance Technician	$ -
Network Administrator	$ -
Network Engineer	$ -
Operations Manager	$ -
Project Manager	$ -
Project Principal	$ -
Quality Assurance/Test Manager	$ -
Senior Maintenance Technician	$ -
Software Architect	$ -
Software Development Engineer	$ -
Software Development Manager	$ -
Software Lead	$ -
Software Programmer I	$ -
Software Programmer II	$ -
Software Programmer III	$ -
System Administrator	$ -
System Analyst	$ -
Systems Engineer	$ -
Technical /Software Development Manager	$ -
Technical Writer	$ -
Training Manager	$ -

Sheet 7-1
Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -

Note 1: CPI adjustments will be made to the Cost based on actual CPI change for the previous year beginning with Operations Year 2 as further described in the Price Proposal Instructions.

Exhibit D - Payment Schedule

A. Payments for Implementation Cashless Tolling System Design and Development					$ -
Payment Number	**Payment Milestone**	**Pay Items**	**% Paid**	**Cum.% Paid**	
A-1	Notice to Proceed	Notice to Proceed.	5.00%	5.00%	$ -
A-2	Cashless Toll System Development and Administration	Project Management Documents Approved (PMP, Project Schedule, QA Plan and SDP, SRD).	10.00%	15.00%	$ -
A-3	Cashless Toll System Design	Business Rules and Design Documents Approved (BRD and SDDD) .	15.00%	30.00%	$ -
A-4	Cashless Toll System Factory Acceptance Testing (FAT)	Test Documentation and Factory Acceptance Testing Approved.	15.00%	45.00%	$ -
A-5	Cashless Toll System Onsite First Installation Testing (OFIT)	Installation Plan Approved, Test Documentation and Onsite Integration Testing Approved - First Site.	10.00%	55.00%	$ -
A-6	Cashless Toll System Manuals and Training	Manuals Approved and Training Approved.	5.00%	60.00%	$ -
A-7	Cashless Toll System Commissioning - Findlay Connector	Installation and Commissioning Approved Ready for Go Live.	5.00%	65.00%	$ -
A-8	Cashless Toll System Commissioning - Southern Beltway	Installation and Commissioning Approved Ready for Go Live.	10.00%	75.00%	$ -
A-9	Cashless Toll System Acceptance	Operational and Acceptance Test Approved, As-builts Approved and Implementation Phase Closed Out.	25.00%	100.00%	$ -

B. Payments Related to Hardware, Equipment and Off-the-Shelf Software				
Payment Number	**Payment Milestone**	**% Paid**	**Cum.% Paid**	
	Findlay Connector			**$ -**
B-1	Ordering Verified Findlay Connector	20.00%	20.00%	$ -
B-2	Purchased, Received and Verified Findlay Connector	60.00%	80.00%	$ -
B-3	Installation Approved Findlay Connector	20.00%	**100.00%**	$ -
	Southern Beltway			**$ -**
B-4	Ordering Verified Southern Beltway	20.00%	20.00%	$ -
B-5	Purchased, Received and Verified Southern Beltway	60.00%	80.00%	$ -
B-6	Installation Approved Southern Beltway	20.00%	**100.00%**	$ -

Addendum No. 3

RFP # 15-10495-7252

Cashless Tolling System Implementation and Maintenance

Prospective Respondents: You are hereby notified of the following information in regard to the referenced RFP:

REVISIONS

1. Replace Exhibit F-7 - Price Proposal in its entirety with the revised Exhibit F-7 – Price Proposal Addendum #3 05-06-2016 provided as attached to this addendum. Electronic file is also provided.
   Changes Noted:
   - Unlocked informational cells B2 and B3 of pricing sheet 7-1 Additional Service Rates.
   - Comments bubbles on sheets that directed proposers to add additional items were hidden.

All other terms, conditions and requirements of the original RFP dated February 17, 2016, Addendum No. 1 and Addendum No. 2 remain unchanged unless modified by this Addendum.

Sheet 1
PTC Cashless Tolling System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

	Base Contract Cost ($)	Optional Future Facilities Cost ($)	Grand Total Cost ($)
Implementation Phase			
In-lane System Cost (Sheet 2/Sheet 6)	$ -	$ -	$ -
Toll Host/System Cost (Sheet 3/Sheet 6)	$ -	$ -	$ -
Total Implementation Phase	$ -	$ -	$ -
Maintenance Phase			
In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Maintenance Phase	$ -	$ -	$ -
Optional Functionality			
In-lane OCR/ALPR and Enforcement Notification Pricing (Sheet 2/Sheet 6)	$ -	$ -	$ -
Total Optional Functionality	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY	$ -	$ -	$ -
Optional Extension Phase			
Extension #1 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #1 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Extension #2 In-lane System Hardware Maintenance and Software Support Services Cost (Sheet 4/Sheet 6)	$ -	$ -	$ -
Extension #2 Toll Host/System Maintenance and Software Support Services Cost (Sheet 5/Sheet 6)	$ -	$ -	$ -
Total Optional Extension Phases	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL EXTENSION PHASES	$ -	$ -	$ -
TOTAL IMPLEMENTATION AND MAINTENANCE PHASE WITH OPTIONAL FUNCTIONALITY AND OPTIONAL EXTENSION PHASES	$ -	$ -	$ -

Grand Total Dollars

Officer Signature

Date

Typed Name, Title, Address and Phone Number

Sheet 2
Base and Optional In-lane System Cost by Roadway
(Summary Only - No Proposer Input Required)

Highway	Planned Go-Live Date	Toll Zone Type	Total # of Toll Zones	Cost Per Toll Zone ($)	Total Cost Toll Zones ($)
Base Contract					
Findlay Connector	Q1 2018	Location TBD	2	$ -	$ -
		Facility Server			$ -
Southern Beltway	Q4 2019	Location TBD	4	$ -	$ -
Total Base Contract			6		$ -
Optional OCR/ALPR and Enforcement Notification					
Findlay Connector	Q1 2018				$ -
Southern Beltway	Q4 2019				$ -
Total Optional OCR/ALPR and Enforcement Notification					$ -

Sheet 3
Toll Host/System Cost
(Summary Only - No Proposer Input Required)

Item #	Description	Unit	Total Cost ($)
1	System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered	LS	$ -
2	Communications Equipment	LS	$ -
3	Zone Controller Software Costs	LS	$ -
4	Software (GUI, Back-end), Host System, MOMS, DVAS and License	LS	$ -
5	Design Documentation	LS	$ -
6	User, Maintenance, and Project Documentation	LS	$ -
7	Training (manuals, materials and delivery)	LS	$ -
8	Factory Acceptance Test	LS	$ -
9	On-Site First Installation Test	LS	$ -
10	Installation and Commissioning Test	LS	$ -
11	System Operational and Acceptance Test	LS	$ -
12	Third Party Warranty and Licenses	LS	$ -
13	Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services	LS	$ -
14	Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services	LS	$ -
15	Spare Parts and Equipment Year 1 - Warranty Year	LS	$ -
16	Insurance and Bonding	LS	$ -
17	Project Management	LS	$ -
18	Engineering and Design	LS	$ -
19	Transition Costs	LS	$ -
	Total Toll Host/System Costs		$ -

Sheet 4
Base and Optional
In-Lane System Hardware Maintenance and Software Support Services Cost
(Summary Only - No Proposer Input Required)

Item #	Description of Items	Total Annual Cost ($)	
	Base Contract Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	See Note #1
2	Year 2 of Maintenance	$ -	
3	Year 3 of Maintenance	$ -	
4	Year 4 of Maintenance	$ -	
5	Year 5 of Maintenance	$ -	
6	Year 6 of Maintenance	$ -	
7	Year 7 of Maintenance	$ -	
8	Year 8 of Maintenance	$ -	
9	Year 9 of Maintenance	$ -	
	Total In-Lane System Hardware Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2 - 9)	$ -	
	Optional Extension 1 Costs		
10	Extension 1 - Year 1 of Maintenance	$ -	
11	Extension 1 - Year 2 of Maintenance	$ -	
12	Extension 1 - Year 3 of Maintenance	$ -	
13	Extension 1 - Year 4 of Maintenance	$ -	
14	Extension 1 - Year 5 of Maintenance	$ -	
	Total Extension 1 Cost	$ -	
	Optional Extension 2 Costs		
15	Extension 2 - Year 1 of Maintenance	$ -	
16	Extension 2 - Year 2 of Maintenance	$ -	
17	Extension 2 - Year 3 of Maintenance	$ -	
18	Extension 2 - Year 4 of Maintenance	$ -	
19	Extension 2 - Year 5 of Maintenance	$ -	
	Total Extension 2 Cost	$ -	
Total Base and Optional In-Lane System Hardware Maintenance and Software Support Services (excluding Warranty)		$ -	

Note 1: Year 1 of Maintenance Total carried forward to Sheet 3 - In-Lane System Hardware Maintenance and Software Support Services. Not included in the total of Sheet 4.

Sheet 5
Base and Optional
Toll Host/System Maintenance and Software Support Services Cost
(Summary Only - No Proposer Input Required)

Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)	
	Base Contract Maintenance Costs			
1	Year 1 of Maintenance (Warranty)	$ -	$ -	See Note #1
2	Year 2 of Maintenance	$ -	$ -	
3	Year 3 of Maintenance	$ -	$ -	
4	Year 4 of Maintenance	$ -	$ -	
5	Year 5 of Maintenance	$ -	$ -	
6	Year 6 of Maintenance	$ -	$ -	
7	Year 7 of Maintenance	$ -	$ -	
8	Year 8 of Maintenance	$ -	$ -	
9	Year 9 of Maintenance	$ -	$ -	
	Total Toll Host/System Maintenance and Software Support Services Base Contract Cost (Maintenance Years 2-9)		$ -	
	Optional Extension 1 Costs			
10	Extension 1 - Year 1 of Maintenance	$ -	$ -	
11	Extension 1 - Year 2 of Maintenance	$ -	$ -	
12	Extension 1 - Year 3 of Maintenance	$ -	$ -	
13	Extension 1 - Year 4 of Maintenance	$ -	$ -	
14	Extension 1 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 1 Cost		$ -	
	Optional Extension 2 Costs			
15	Extension 2 - Year 1 of Maintenance	$ -	$ -	
16	Extension 2 - Year 2 of Maintenance	$ -	$ -	
17	Extension 2 - Year 3 of Maintenance	$ -	$ -	
18	Extension 2 - Year 4 of Maintenance	$ -	$ -	
19	Extension 2 - Year 5 of Maintenance	$ -	$ -	
	Total Extension 2 Cost		$ -	
Total Base and Optional Toll Host/System Maintenance and Software Support Services (excluding Warranty)			$ -	

Note 1: Year One of Maintenance Total carried forward to Sheet 3 - Toll Host/System Maintenance and Software Support Services. Not included in the total of Sheet 5.

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future System Implementation Cost		
Item #	Description of Items	Total Annual Cost ($)
	Future In-Lane System Cost (by Zone Type)	
1	Zone Type 1 (3+1+1)	$ -
2	Zone Type 2 (3+2+0)	$ -
3	Zone Type 3 (2+1+1)	$ -
4	Zone Type 4 (2+2+0)	$ -
5	Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -
6	Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -
7	Host Cost	$ -
8	Facility Server	$ -
9	Optional OCR/ALPR and Enforcement Notification	$ -
	Total Future System Implementation Cost	$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future In-Lane System Hardware Maintenance and Software Support Services Cost Summary		
Item #	Description of Items	Total Annual Cost ($)
	Maintenance Costs	
1	Year 1 of Maintenance (Warranty)	$ -
2	Year 2 of Maintenance	$ -
3	Year 3 of Maintenance	$ -
4	Year 4 of Maintenance	$ -
5	Year 5 of Maintenance	$ -
6	Year 6 of Maintenance	$ -
	Total Future In-Lane System Hardware Maintenance and Software Support Services Cost (Maintenance Years 1 - 6)	$ -
	Optional Extension 1 Costs	
7	Extension 1 - Year 1 of Maintenance	$ -
8	Extension 1 - Year 2 of Maintenance	$ -
9	Extension 1 - Year 3 of Maintenance	$ -
10	Extension 1 - Year 4 of Maintenance	$ -
11	Extension 1 - Year 5 of Maintenance	$ -
	Total Extension 1 Cost	$ -
	Optional Extension 2 Costs	
12	Extension 2 - Year 1 of Maintenance	$ -
13	Extension 2 - Year 2 of Maintenance	$ -
14	Extension 2 - Year 3 of Maintenance	$ -
15	Extension 2 - Year 4 of Maintenance	$ -
16	Extension 2 - Year 5 of Maintenance	$ -
	Total Extension 2 Cost	$ -
Total Future In-Lane System Hardware Maintenance and Software Support Services		$ -

Sheet 6
Optional Future Facilities System Implementation and Maintenance Cost
(Summary Only - No Proposer Input Required)

Optional Future Toll Host/System Maintenance and Software Support Services Cost Summary			
Item #	Description of Items	Total Monthly Cost ($)	Total Annual Cost ($)
	Maintenance Costs		
1	Year 1 of Maintenance (Warranty)	$ -	$ -
2	Year 2 of Maintenance	$ -	$ -
3	Year 3 of Maintenance	$ -	$ -
4	Year 4 of Maintenance	$ -	$ -
5	Year 5 of Maintenance	$ -	$ -
6	Year 6 of Maintenance	$ -	$ -
	Total Future Toll Host/System Maintenance and Software Support Services Cost (Maintenance Years 1-6)		$ -
	Optional Extension 1 Costs		
7	Extension 1 - Year 1 of Maintenance	$ -	$ -
8	Extension 1 - Year 2 of Maintenance	$ -	$ -
9	Extension 1 - Year 3 of Maintenance	$ -	$ -
10	Extension 1 - Year 4 of Maintenance	$ -	$ -
11	Extension 1 - Year 5 of Maintenance	$ -	$ -
	Total Extension 1 Cost		$ -
	Optional Extension 2 Costs		
12	Extension 2 - Year 1 of Maintenance	$ -	$ -
13	Extension 2 - Year 2 of Maintenance	$ -	$ -
14	Extension 2 - Year 3 of Maintenance	$ -	$ -
15	Extension 2 - Year 4 of Maintenance	$ -	$ -
16	Extension 2 - Year 5 of Maintenance	$ -	$ -
	Total Extension 2 Cost		$ -
	Total Future Toll Host/System Maintenance and Software Support Services		$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Zone Type 7 (2+2+0) Space Frame with Maint Below					
1. Redundant Toll Zone Controller and In-lane Electronics[1]					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -	$ -	$ -
2. AVI System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVI System			$ -	$ -	$ -
3. AVC System					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total AVC System			$ -	$ -	$ -
4. LPICPS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total LPICPS			$ -	$ -	$ -
5. Communications Equipment					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
6. Equipment Racks					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Equipment Racks			$ -	$ -	$ -
7. DVAS					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total DVAS			$ -	$ -	$ -

Sheet 2-1 Back-up
Base and Optional In-Lane System Cost Schedule

LANE TYPES & ITEM DESCRIPTION	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
8. Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Commissioning Test			$ -	$ -	$ -
Total			$ -	$ -	$ -
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Facility Server			$ -	$ -	$ -
Total with Facility Server			$ -	$ -	$ -
Labor Check (from Sheet 2-2, cell F50) should equal cell E77				$ -	
Optional OCR/ALPR and Enforcement Notification Findlay Connector					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification Southern Beltway					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Optional OCR/ALPR and Enforcement Notification			$ -	$ -	$ -

Note 1: All hardware/software provided under this Contract should be included in these costs.
Note 2: Use the additional rows as needed to itemize each components
Note 3: All roadways are current Year Cost.
Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.
Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work
Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 2-2 Back-up
In-Lane System - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			In-Lane Cost		
			Rate	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
1 System Hardware, Third Party Software, Installation and Commissioning not Otherwise Covered					
Host Servers - equipment, purchase, install, configure and test	0	$ -	$ -	$ -	$ -
Storage Works	0	$ -	$ -	$ -	$ -
Back-up Library	0	$ -	$ -	$ -	$ -
Other Third-party Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Hardware, Third Party SW and Installation not Otherwise Covered			$ -	$ -	$ -
2 Communications Equipment					
Switches	0	$ -	$ -	$ -	$ -
LAN HW	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Communications Equipment			$ -	$ -	$ -
3 Zone Controller Software Costs					
Zone Controller Software	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Zone Controller Software Costs			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
4 Software (GUI, Back-end), Host System, MOMS, DVAS and License					
Host Software	0	$ -	$ -	$ -	$ -
MOMS	0	$ -	$ -	$ -	$ -
DVAS	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Software (GUI, Back-end), Host System, MOMS, DVAS and License			$ -	$ -	$ -
5 Design Documentation					
Lane Drawings	0	$ -	$ -	$ -	$ -
SDDD	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Design Documentation			$ -	$ -	$ -
6 User, Maintenance, and Project Documentation					
Documents/Manuals	0	$ -	$ -	$ -	$ -
Maintenance Manual	0	$ -	$ -	$ -	$ -
Installation Manual	0	$ -	$ -	$ -	$ -
Project Plans	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total User, Maintenance and Project Documentation			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
7 Training (manuals, materials and delivery)					
Maintenance Training	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Training			$ -	$ -	$ -
8 Factory Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Factory Acceptance Test			$ -	$ -	$ -
9 On-Site First Installation Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total On-Site First Installation Test			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
10 Installation and Commissioning Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Installation and Commissioning Test			$ -	$ -	$ -
11 System Operational and Acceptance Test					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total System Operational and Acceptance Test			$ -	$ -	$ -
12 Third Party Warranty and Licenses					
DB Licenses	0	$ -	$ -	$ -	$ -
OS Licenses	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Third Party Warranty and Licenses			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
13 Warranty First Year of Operation - In-lane System Hardware Maintenance and Software Support Services					
Year 1 Warranty (from sheet 4)					$ -
Total Warranty First Year of Operation - In-Lane System Maintenance and Software Support Services					$ -
14 Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					
Year 1 Warranty (from sheet 5)					$ -
Total Warranty First Year of Operation - Toll Host/System Maintenance and Software Support Services					$ -
15 Spare Parts and Equipment Year 1 - Warranty Year					
Spare Year 1 (From Sheet 3-2) In-Lane Spares					$ -
Spare Year 1 (From Sheet 3-2) Host System Spares					$ -
Total Spare Parts and Equipment Year 1 - Warranty Year					$ -
16 Insurance and Bonding					
Insurance and Bonding	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Insurance and Bonding			$ -	$ -	$ -

Sheet 3-1 Back-up
Toll Host/System Cost Schedule

DESCRIPTION OF ITEMS	# UNIT	UNIT ($)	TOTAL ITEM COST ($)	LABOR ($)	TOTAL COST ($)
Toll Host/System					
17 Project Management					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Project Management			$ -	$ -	$ -
18 Engineering and Design					
Lane Installation Design Drawings	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Engineering and Design			$ -	$ -	$ -
19 Transition Costs					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total Transition Costs			$ -	$ -	$ -
Total Host/System Costs			$ -	$ -	$ -
Labor Check (from Sheet 3-3, cell F50) should equal cell F174				$ -	

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
In-Lane Spares (All Roadways)	Year 1 - Warranty Year		
1. Redundant Toll Zone Controller and In-lane Electronics[1]			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Serial Controllers	0	$ -	$ -
Power Supply	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Redundant Toll Zone Controller and In-lane Electronics[1]			$ -
2. AVI System			
AVI Reader Modules	0	$ -	$ -
AVI Antennas	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVI System			$ -
3. AVC System			
Primary AVDC Sensor	0	$ -	$ -
AVDC Detector Cards	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total AVC System			$ -
4. LPICPS			
Front Cameras	0	$ -	$ -
Rear Cameras	0	$ -	$ -
Illuminators	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Cables and Connectors	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total LPICPS			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
5. Communications Equipment			
Switches	0	$ -	$ -
Power Supply	0	$ -	$ -
Router	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
6. Equipment Racks			
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Equipment Racks			$ -
7. DVAS			
Cameras	0	$ -	$ -
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total DVAS			$ -
Spare Cost Warranty Year (Year 1) In-Lane System			$ -

Sheet 3-2 Back-up
In-Lane System and Toll Host/System Spares Cost Year 1

SPARE PARTS DESCRIPTION	TOTAL QUANITY	UNIT ($)	TOTAL ITEM COST ($)
Toll Host/System Spares Cost	Year 1 - Warranty Year		
1. System Hardware			
Servers	0	$ -	$ -
Hard drive	0	$ -	$ -
Miscellaneous	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total System Hardware			$ -
2. Communications Equipment			
LAN Equipment	0	$ -	$ -
Power Supply	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
	0	$ -	$ -
Total Communications Equipment			$ -
Spare Cost Warranty Year (Year 1) Toll Host/System			$ -
Total Spare Cost Warranty Year (Year 1) In-Lane and Toll Host/System			$ -

Sheet 3-3 Back-up
Toll Host/System -
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		
			Toll Host/System Costs		
			Rate	Hours	Total System Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Total Labor Cost				$ -

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs - Southern Beltway				
Total Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	2	12	$ -
Total Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	2	12	$ -
Total Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 6 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 7 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 8 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Year 9 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Sheet 4-1 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services Schedule
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	6	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Year 7 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 7	$ -
Year 8 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 8	$ -
Year 9 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 9	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -

Sheet 4-2 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services

Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up
Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Year 8 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Year 8 Rate	Year 8 Hours	Year 8 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 9 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 9 Rate	Year 9 Hours	Year 9 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 4-3 Back-up

Base and Optional In-lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		CADD Technician	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -
14		Installation Technician	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -
20		Network Administrator	$ -	0	$ -
21		Network Engineer	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -
23		Software Architect	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -
26		Software Lead	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -
30		System Administrator	$ -	0	$ -
31		System Analyst	$ -	0	$ -
32		Technical Writer	$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Year 7 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 7 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 8 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 8 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 9 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 9 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-1 Back-up

Base and Optional Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 5-2
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 7 of Maintenance			LOADED HOURLY BILLING RATES Year 8 of Maintenance		
			Year 7 Rate	Year 7 Hours	Year 7 Total Labor Cost	Year 8 Rate	Year 8 Hours	Year 8 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 1

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 9 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Year 9 Rate	Year 9 Hours	Year 9 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -
	% increase/decrease from previous year							

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 5-2 Back-up
Base and Optional Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Optional Extension 2

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -
2		Project Manager	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -
5		Installation Manager	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -
8		Database Administrator	$ -	0	$ -
9		Database Analyst	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -
16		Network Administrator	$ -	0	$ -
17		Operations Manager	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -
21		Software Lead	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -
25		System Administrator	$ -	0	$ -
26		System Analyst	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -
28		Technical Writer	$ -	0	$ -
29		Training Manager	$ -	0	$ -
30		Transition Manager	$ -	0	$ -
31			$ -	0	$ -
32			$ -	0	$ -
33			$ -	0	$ -
34			$ -	0	$ -
35			$ -	0	$ -
36			$ -	0	$ -
37			$ -	0	$ -
38			$ -	0	$ -
39			$ -	0	$ -
40			$ -	0	$ -
41			$ -	0	$ -
42			$ -	0	$ -
43			$ -	0	$ -
44			$ -	0	$ -
45			$ -	0	$ -
	Grand Total Labor Cost				$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 1 Quantity	Year 1 Unit Evaluation Cost including Labor	Year 1 Total Evaluation Cost	Year 2 Quantity	Year 2 Unit Evaluation Cost including Labor	Year 2 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						
Zone Type 2 (3+2+0)	$ -	$ -						
Zone Type 3 (2+1+1)	$ -	$ -						
Zone Type 4 (2+2+0)	$ -	$ -						
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						
Estimated Zones Ordered/Costs								
Estimated Zones Ordered/Costs Volume Discount								
Estimated Zones Ordered/Costs (less volume discount)								
Incremental Host Cost (based on zone quantity)								
Facility Server (if applicable)	$ -	$ -						
Estimated Incremental Host Cost and Facility Server Cost								
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -						
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 3 Quantity	Year 3 Unit Evaluation Cost including Labor	Year 3 Total Evaluation Cost	Year 4 Quantity	Year 4 Unit Evaluation Cost including Labor	Year 4 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -				14	$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -				6	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				4	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 5 Quantity	Year 5 Unit Evaluation Cost including Labor	Year 5 Total Evaluation Cost	Year 6 Quantity	Year 6 Unit Evaluation Cost including Labor	Year 6 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				8	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -						$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -				14	$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						24		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)							
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 7 Quantity	Year 7 Unit Evaluation Cost including Labor	Year 7 Total Evaluation Cost	Year 8 Quantity	Year 8 Unit Evaluation Cost including Labor	Year 8 Total Evaluation Cost
Zone Type 1 (3+1+1)	$ -	$ -						$ -
Zone Type 2 (3+2+0)	$ -	$ -				20	$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -				6	$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -				2	$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -						$ -
Estimated Zones Ordered/Costs						28		$ -
Estimated Zones Ordered/Costs Volume Discount								$ -
Estimated Zones Ordered/Costs (less volume discount)								$ -
Incremental Host Cost (based on zone quantity)								$ -
Facility Server (if applicable)	$ -	$ -				1	$ -	$ -
Estimated Incremental Host Cost and Facility Server Cost								$ -
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs								$ -
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -					$ -	$ -
Volume Discount by Zone Quantity:								
Volume Discount for 10- 19 Zones	0.00%							
Volume Discount for 20- 29 Zones	0.00%							
Volume Discount for 30- 39 Zones	0.00%							
Volume Discount for over 40 Zones	0.00%							

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-1 Back-up
Optional Future Pricing Cashless Tolling System
Implementation Cost
(Summary Only) (2016 Values)

Optional System Implementation Costs		Escalation % for Labor (Over Previous Year)								
In-Lane System Cost (by Zone)	2016 Values for Other Direct Cost	3.0% 2016 Labor	Year 9 Quantity	Year 9 Unit Evaluation Cost including Labor	Year 9 Total Evaluation Cost	Year 10 Quantity	Year 10 Unit Evaluation Cost including Labor	Year 10 Total Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost	Total Optional Future Pricing Implementation Evaluation Cost less discount by Zone Type
Zone Type 1 (3+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 2 (3+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 3 (2+1+1)	$ -	$ -			$ -				$ -	$ -
Zone Type 4 (2+2+0)	$ -	$ -			$ -				$ -	$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below	$ -	$ -	40	$ -	$ -				$ -	$ -
Zone Type 6 (3+1+1) Space Frame with Maint Below	$ -	$ -	2	$ -	$ -				$ -	$ -
Estimated Zones Ordered/Costs			42		$ -				$ -	
Estimated Zones Ordered/Costs Volume Discount					$ -				$ -	
Estimated Zones Ordered/Costs (less volume discount)					$ -				$ -	
Incremental Host Cost (based on zone quantity)					$ -				$ -	
Facility Server (if applicable)	$ -	$ -	3	$ -	$ -				$ -	
Estimated Incremental Host Cost and Facility Server Cost					$ -				$ -	
Estimated Zones Ordered/Costs (including volume discount), Incremental Host and Facility Server Costs					$ -				$ -	
Optional Functionality - OCR/ALPR and Enforcement Notification Incremental Cost	$ -	$ -		$ -	$ -				$ -	
Volume Discount by Zone Quantity:										
Volume Discount for 10- 19 Zones	0.00%									
Volume Discount for 20- 29 Zones	0.00%									
Volume Discount for 30- 39 Zones	0.00%									
Volume Discount for over 40 Zones	0.00%									

Note 1: CPI Composite of 3% may be used for evaluation purposes. CPI adjustments will be made to the Implementation Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
	2016 Values		
Zone Type 1 (3+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 2 (3+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 3 (2+1+1)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 4 (2+2+0)			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -
Zone Type 5 (2+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

Sheet 6-2 Back-up
Optional Future Pricing by Zone by Type

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL ITEM COST ($)
Zone Type 6 (3+1+1) Space Frame with Maint Below			-
1. Redundant Toll Zone Controller and In-lane Electronics	0	$ -	$ -
2. AVI System	0	$ -	$ -
3. AVDC System	0	$ -	$ -
4. ICPS	0	$ -	$ -
5. Communications Equipment	0	$ -	$ -
6. Equipment Cabinets w/Locks	0	$ -	$ -
7. DVAS	0	$ -	$ -
8. Commissioning Test	0	$ -	$ -
Total			$ -

DESCRIPTION OF ITEMS	Quantity per Toll Zone	UNIT ($)	TOTAL UNIT ($)	LABOR ($)	TOTAL COST ($)
Facility Server					
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Host Cost (if applicable) Lump Sum for First Year of Implementation			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -
Optional OCR/ALPR and Enforcement Notification - Per Zone Cost (if applicable)			-		
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
	0	$ -	$ -	$ -	$ -
Total			$ -	$ -	$ -

Note 1: All costs are current Year Cost.

Note 2: All hardware/software provided under this Contract should be included in these costs.

Note 3: All roadways are current Year Cost.

Note 4: Single redundant zone controller is inclusive of two redundant units in all cases in the schedules.

Note 5: Costs must include all in-lane installation costs, including cost of installation check and inspection as detailed in Section 2 of the Scope of Work

Note 6: Commissioning Test shall also include all costs to provide the individual tolling plaza testing as detailed in Section 2 of the Scope of Work.

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			2016 Loaded Labor Rate	Zone Type 1 (3+1+1)		Zone Type 2 (3+2+0)	
				2016 Values		2016 Values	
				Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	$ -	0	$ -	0	$ -
2		Project Manager	$ -	0	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	0	$ -
23		Software Architect	$ -	0	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	0	$ -
26		Software Lead	$ -	0	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	0	$ -
30		System Administrator	$ -	0	$ -	0	$ -
31		System Analyst	$ -	0	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	0	$ -
33			$ -	0	$ -	0	$ -
34			$ -	0	$ -	0	$ -
35			$ -	0	$ -	0	$ -
36			$ -	0	$ -	0	$ -
37			$ -	0	$ -	0	$ -
38			$ -	0	$ -	0	$ -
39			$ -	0	$ -	0	$ -
40			$ -	0	$ -	0	$ -
41			$ -	0	$ -	0	$ -
42			$ -	0	$ -	0	$ -
43			$ -	0	$ -	0	$ -
44			$ -	0	$ -	0	$ -
	Total Labor Cost				$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			Zone Type 3 (2+1+1)		Zone Type 4 (2+2+0)	
			2016 Values		2016 Values	
			Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	0	$ -	0	$ -
2		Project Manager	0	$ -	0	$ -
3		Technical /Software Development Manager	0	$ -	0	$ -
4		Lane Technical Lead	0	$ -	0	$ -
5		Installation Manager	0	$ -	0	$ -
6		Maintenance Manager	0	$ -	0	$ -
7		Quality Assurance/Test Manager	0	$ -	0	$ -
8		CADD Technician	0	$ -	0	$ -
9		Database Analyst	0	$ -	0	$ -
10		Deputy Project Manager	0	$ -	0	$ -
11		Electrician Helper	0	$ -	0	$ -
12		Hardware Engineer/Lead	0	$ -	0	$ -
13		Installation Supervisor	0	$ -	0	$ -
14		Installation Technician	0	$ -	0	$ -
15		Licensed Electrical Engineer	0	$ -	0	$ -
16		Licensed Electrician	0	$ -	0	$ -
17		Maintenance Manager	0	$ -	0	$ -
18		Maintenance Supervisor	0	$ -	0	$ -
19		Maintenance Technician	0	$ -	0	$ -
20		Network Administrator	0	$ -	0	$ -
21		Network Engineer	0	$ -	0	$ -
22		Senior Maintenance Technician	0	$ -	0	$ -
23		Software Architect	0	$ -	0	$ -
24		Software Development Engineer	0	$ -	0	$ -
25		Software Development Manager	0	$ -	0	$ -
26		Software Lead	0	$ -	0	$ -
27		Software Programmer I	0	$ -	0	$ -
28		Software Programmer II	0	$ -	0	$ -
29		Software Programmer III	0	$ -	0	$ -
30		System Administrator	0	$ -	0	$ -
31		System Analyst	0	$ -	0	$ -
32		Technical Writer	0	$ -	0	$ -
33			0	$ -	0	$ -
34			0	$ -	0	$ -
35			0	$ -	0	$ -
36			0	$ -	0	$ -
37			0	$ -	0	$ -
38			0	$ -	0	$ -
39			0	$ -	0	$ -
40			0	$ -	0	$ -
41			0	$ -	0	$ -
42			0	$ -	0	$ -
43			0	$ -	0	$ -
44			0	$ -	0	$ -
	Total Labor Cost			$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be ma
Maintenance Cost based on actual CPI change for the previous year as further describe
Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page v

Sheet 6-3 Back-up
Optional Future Pricing by Zone and Type
Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	LOADED HOURLY BILLING RATES BY TASK		LOADED HOURLY BILLING RATES BY TASK	
			Zone Type 5 (2+1+1) Space Frame with Maint Below		Zone Type 6 (3+1+1) Space Frame with Maint Below	
			2016 Values		2016 Values	
			Hours	Total Labor Cost	Hours	Total Labor Cost
1		Project Principal	0	$ -	0	$ -
2		Project Manager	0	$ -	0	$ -
3		Technical /Software Development Manager	0	$ -	0	$ -
4		Lane Technical Lead	0	$ -	0	$ -
5		Installation Manager	0	$ -	0	$ -
6		Maintenance Manager	0	$ -	0	$ -
7		Quality Assurance/Test Manager	0	$ -	0	$ -
8		CADD Technician	0	$ -	0	$ -
9		Database Analyst	0	$ -	0	$ -
10		Deputy Project Manager	0	$ -	0	$ -
11		Electrician Helper	0	$ -	0	$ -
12		Hardware Engineer/Lead	0	$ -	0	$ -
13		Installation Supervisor	0	$ -	0	$ -
14		Installation Technician	0	$ -	0	$ -
15		Licensed Electrical Engineer	0	$ -	0	$ -
16		Licensed Electrician	0	$ -	0	$ -
17		Maintenance Manager	0	$ -	0	$ -
18		Maintenance Supervisor	0	$ -	0	$ -
19		Maintenance Technician	0	$ -	0	$ -
20		Network Administrator	0	$ -	0	$ -
21		Network Engineer	0	$ -	0	$ -
22		Senior Maintenance Technician	0	$ -	0	$ -
23		Software Architect	0	$ -	0	$ -
24		Software Development Engineer	0	$ -	0	$ -
25		Software Development Manager	0	$ -	0	$ -
26		Software Lead	0	$ -	0	$ -
27		Software Programmer I	0	$ -	0	$ -
28		Software Programmer II	0	$ -	0	$ -
29		Software Programmer III	0	$ -	0	$ -
30		System Administrator	0	$ -	0	$ -
31		System Analyst	0	$ -	0	$ -
32		Technical Writer	0	$ -	0	$ -
33			0	$ -	0	$ -
34			0	$ -	0	$ -
35			0	$ -	0	$ -
36			0	$ -	0	$ -
37			0	$ -	0	$ -
38			0	$ -	0	$ -
39			0	$ -	0	$ -
40			0	$ -	0	$ -
41			0	$ -	0	$ -
42			0	$ -	0	$ -
43			0	$ -	0	$ -
44			0	$ -	0	$ -
	Total Labor Cost			$ -		$ -

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be ma
Maintenance Cost based on actual CPI change for the previous year as further describe
Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page v

Sheet 6-4 Back-up
Optional Incremental Host System Cost
(2016 Values)

DESCRIPTION OF ITEMS	PER ZONE COST ($)
Incremental Host System Cost Per Zone (1 - 9 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (1-9 Zones)	$ -
Incremental Host System Cost Per Zone (10 - 19 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (10-19 Zones)	$ -
Incremental Host System Cost Per Zone (20 - 29 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (20-29 Zones)	$ -
Incremental Host System Cost Per Zone (30 - 39 Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (30-39 Zones)	$ -
Incremental Host System Cost Per Zone (40 or more Zones)	
Proof of Concept	$ -
System Operational and Acceptance Test	$ -
Spares	$ -
Project Management	$ -
Engineering	$ -
Insurance and Bonding	$ -
Per Zone (40 or more Zones)	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Base Contract Maintenance Costs				
Year 1 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 2 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	24	12	$ -
Year 3 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 4 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	48	12	$ -
Year 5 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	76	12	$ -
Year 6 of Maintenance In-lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Optional Extension 1 Costs				
Total Extension 1 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 1 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Sheet 6-5 Back-up
Optional Future In-lane System Hardware Maintenance and Software Support Services
(Summary Only)

DESCRIPTION OF ITEMS	Total Monthly Cost ($) Per Toll Zone	# of Toll Zones	Number of Months	Annual Cost ($)
Optional Extension 2 Costs				
Total Extension 2 Year 1 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 2 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 3 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 4 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -
Total Extension 2 Year 5 In-Lane System Hardware Maintenance and Software Support Services	$ -	118	12	$ -

Note 1: CPI Composite of 3% used for evaluation purposes. Adjustments will made to the monthly Maintenance Cost based on actual CPI (Labor) for each year of the Contract Term.

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Base Contract Future Maintenance Costs	
Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 1	$ -
Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 2	$ -
Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 3	$ -
Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 4	$ -
Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 5	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Year 6 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Year 6	$ -
Optional Extension 1 Costs	
Extension 1 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 1	$ -
Extension 1 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 2	$ -
Extension 1 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 3	$ -
Extension 1 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 1 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 1 Year 5	$ -
Optional Extension 2 Costs	
Extension 2 Year 1 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 1	$ -
Extension 2 Year 2 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 2	$ -
Extension 2 Year 3 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 3	$ -
Extension 2 Year 4 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 4	$ -

Sheet 6-6 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services
Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	MONTHLY TOTAL ($) BY ZONE
Extension 2 Year 5 of Maintenance - Monthly In-Lane Hardware Maintenance and Software Support Services	
Labor	$ -
MPT	$ -
Material, Tools and Occupancy	$ -
Other	$ -
Maintenance Payment of Performance Bond (X%)	$ -
Total Monthly Extension 2 Year 5	$ -

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -
	% increase/decrease from previous year								

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up
Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-7 Back-up

Optional Future In-Lane System Hardware Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Lane Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		CADD Technician	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Electrician Helper	$ -	0	$ -	$ -	0	$ -
12		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
13		Installation Supervisor	$ -	0	$ -	$ -	0	$ -
14		Installation Technician	$ -	0	$ -	$ -	0	$ -
15		Licensed Electrical Engineer	$ -	0	$ -	$ -	0	$ -
16		Licensed Electrician	$ -	0	$ -	$ -	0	$ -
17		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
18		Maintenance Supervisor	$ -	0	$ -	$ -	0	$ -
19		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
20		Network Administrator	$ -	0	$ -	$ -	0	$ -
21		Network Engineer	$ -	0	$ -	$ -	0	$ -
22		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
23		Software Architect	$ -	0	$ -	$ -	0	$ -
24		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
25		Software Development Manager	$ -	0	$ -	$ -	0	$ -
26		Software Lead	$ -	0	$ -	$ -	0	$ -
27		Software Programmer I	$ -	0	$ -	$ -	0	$ -
28		Software Programmer II	$ -	0	$ -	$ -	0	$ -
29		Software Programmer III	$ -	0	$ -	$ -	0	$ -
30		System Administrator	$ -	0	$ -	$ -	0	$ -
31		System Analyst	$ -	0	$ -	$ -	0	$ -
32		Technical Writer	$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Base Contract							
Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Year 6 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Year 6 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Optional Extension Costs							
Extension 1 Costs							
Extension 1 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 2 Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 1 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 1 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 1 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Costs							
Extension 2 Year 1 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 1 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 2 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 2 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 3 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 3 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -
Extension 2 Year 4 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 4 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-8 Back-up

Optional Future Toll Host/System Maintenance and Software Support Services - Labor and Other Direct Cost Items by Month

DESCRIPTION OF ITEMS	# UNITS	UNIT $	TOTAL ITEM COST ($)	LABOR $	TOTAL MONTHLY COST	Labor Check E * # months	Labor Check From Sheet 6-9
Extension 2 Year 5 of Maintenance: Monthly Toll Host/System Maintenance and Software Support Services							
Management/Supervision	0	$ -	$ -	$ -	$ -		
Software Management	0	$ -	$ -	$ -	$ -		
System and Database Admin	0	$ -	$ -	$ -	$ -		
System Monitoring	0	$ -	$ -	$ -	$ -		
Upgrades	0	$ -	$ -	$ -	$ -		
Materials	0	$ -	$ -	$ -	$ -		
Equipment	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
	0	$ -	$ -	$ -	$ -		
Total Extension 2 Year 5 Monthly Toll Host/System Maintenance and Software Support Services			$ -	$ -	$ -	$ -	$ -

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION		Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
				LOADED HOURLY BILLING RATES Year 1 of Maintenance			LOADED HOURLY BILLING RATES Year 2 of Maintenance		
			2016 Loaded Labor Rate	Year 1 Rate	Year 1 Hours	Year 1 Total Labor Cost	Year 2 Rate	Year 2 Hours	Year 2 Total Labor Cost
1		Project Principal	$ -	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	$ -	0	$ -	$ -	0	$ -
31			$ -	$ -	0	$ -	$ -	0	$ -
32			$ -	$ -	0	$ -	$ -	0	$ -
33			$ -	$ -	0	$ -	$ -	0	$ -
34			$ -	$ -	0	$ -	$ -	0	$ -
35			$ -	$ -	0	$ -	$ -	0	$ -
36			$ -	$ -	0	$ -	$ -	0	$ -
37			$ -	$ -	0	$ -	$ -	0	$ -
38			$ -	$ -	0	$ -	$ -	0	$ -
39			$ -	$ -	0	$ -	$ -	0	$ -
40			$ -	$ -	0	$ -	$ -	0	$ -
41			$ -	$ -	0	$ -	$ -	0	$ -
42			$ -	$ -	0	$ -	$ -	0	$ -
43			$ -	$ -	0	$ -	$ -	0	$ -
44			$ -	$ -	0	$ -	$ -	0	$ -
45			$ -	$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost					$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 3 of Maintenance			LOADED HOURLY BILLING RATES Year 4 of Maintenance		
			Year 3 Rate	Year 3 Hours	Year 3 Total Labor Cost	Year 4 Rate	Year 4 Hours	Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)	3.0%		Escalation % (Over Previous Year)	3.0%	
			LOADED HOURLY BILLING RATES Year 5 of Maintenance			LOADED HOURLY BILLING RATES Year 6 of Maintenance		
			Year 5 Rate	Year 5 Hours	Year 5 Total Labor Cost	Year 6 Rate	Year 6 Hours	Year 6 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 1		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance		
			Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost	Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 1			Optional Extension 1		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance		
			Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost	Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

			Optional Extension 1			Optional Extension 2		
Item #	STAFF NAMES	POSITION/CLASSIFICATION	Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 1 of Maintenance		
			Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost	Extension Year 1 Rate	Extension Year 1 Hours	Extension Year 1 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 2 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 3 of Maintenance		
			Extension Year 2 Rate	Extension Year 2 Hours	Extension Year 2 Total Labor Cost	Extension Year 3 Rate	Extension Year 3 Hours	Extension Year 3 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 6-9 Back-up
Optional Future Toll Host/System Maintenance and Software Support Services - Staff and Position Classifications with Rates

Item #	STAFF NAMES	POSITION/CLASSIFICATION	Optional Extension 2			Optional Extension 2		
			Escalation % (Over Previous Year)		3.0%	Escalation % (Over Previous Year)		3.0%
			LOADED HOURLY BILLING RATES Extension Year 4 of Maintenance			LOADED HOURLY BILLING RATES Extension Year 5 of Maintenance		
			Extension Year 4 Rate	Extension Year 4 Hours	Extension Year 4 Total Labor Cost	Extension Year 5 Rate	Extension Year 5 Hours	Extension Year 5 Total Labor Cost
1		Project Principal	$ -	0	$ -	$ -	0	$ -
2		Project Manager	$ -	0	$ -	$ -	0	$ -
3		Technical /Software Development Manager	$ -	0	$ -	$ -	0	$ -
4		Host Technical Lead	$ -	0	$ -	$ -	0	$ -
5		Installation Manager	$ -	0	$ -	$ -	0	$ -
6		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
7		Quality Assurance/Test Manager	$ -	0	$ -	$ -	0	$ -
8		Database Administrator	$ -	0	$ -	$ -	0	$ -
9		Database Analyst	$ -	0	$ -	$ -	0	$ -
10		Deputy Project Manager	$ -	0	$ -	$ -	0	$ -
11		Finance Manager (Design/Implementation)	$ -	0	$ -	$ -	0	$ -
12		Finance Manager (Operations)	$ -	0	$ -	$ -	0	$ -
13		Hardware Engineer/Lead	$ -	0	$ -	$ -	0	$ -
14		Maintenance Manager	$ -	0	$ -	$ -	0	$ -
15		Maintenance Technician	$ -	0	$ -	$ -	0	$ -
16		Network Administrator	$ -	0	$ -	$ -	0	$ -
17		Operations Manager	$ -	0	$ -	$ -	0	$ -
18		Senior Maintenance Technician	$ -	0	$ -	$ -	0	$ -
19		Software Development Engineer	$ -	0	$ -	$ -	0	$ -
20		Software Development Manager	$ -	0	$ -	$ -	0	$ -
21		Software Lead	$ -	0	$ -	$ -	0	$ -
22		Software Programmer I	$ -	0	$ -	$ -	0	$ -
23		Software Programmer II	$ -	0	$ -	$ -	0	$ -
24		Software Programmer III	$ -	0	$ -	$ -	0	$ -
25		System Administrator	$ -	0	$ -	$ -	0	$ -
26		System Analyst	$ -	0	$ -	$ -	0	$ -
27		Systems Engineer	$ -	0	$ -	$ -	0	$ -
28		Technical Writer	$ -	0	$ -	$ -	0	$ -
29		Training Manager	$ -	0	$ -	$ -	0	$ -
30		Transition Manager	$ -	0	$ -	$ -	0	$ -
31			$ -	0	$ -	$ -	0	$ -
32			$ -	0	$ -	$ -	0	$ -
33			$ -	0	$ -	$ -	0	$ -
34			$ -	0	$ -	$ -	0	$ -
35			$ -	0	$ -	$ -	0	$ -
36			$ -	0	$ -	$ -	0	$ -
37			$ -	0	$ -	$ -	0	$ -
38			$ -	0	$ -	$ -	0	$ -
39			$ -	0	$ -	$ -	0	$ -
40			$ -	0	$ -	$ -	0	$ -
41			$ -	0	$ -	$ -	0	$ -
42			$ -	0	$ -	$ -	0	$ -
43			$ -	0	$ -	$ -	0	$ -
44			$ -	0	$ -	$ -	0	$ -
45			$ -	0	$ -	$ -	0	$ -
	Grand Total Labor Cost				$ -			$ -

% increase/decrease from previous year

Note 1: CPI Composite of 3% used for evaluation purposes. CPI adjustments will be made to the Monthly Maintenance Cost based on actual CPI change for the previous year as further described in the Price Proposal Instructions.

Use as many pages as necessary to develop the Staff Listing (please label each page with number)

Sheet 7-1

Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
CADD Technician	$ -
Database Administrator	$ -
Database Analyst	$ -
Deputy Project Manager	$ -
Electrician Helper	$ -
Finance Manager (Design/Implementation)	$ -
Finance Manager (Operations)	$ -
Hardware Engineer/Lead	$ -
Host Technical Lead	$ -
Installation Manager	$ -
Installation Supervisor	$ -
Installation Technician	$ -
Lane Technical Lead	$ -
Licensed Electrical Engineer	$ -
Licensed Electrician	$ -
Maintenance Manager	$ -
Maintenance Supervisor	$ -
Maintenance Technician	$ -
Network Administrator	$ -
Network Engineer	$ -
Operations Manager	$ -
Project Manager	$ -
Project Principal	$ -
Quality Assurance/Test Manager	$ -
Senior Maintenance Technician	$ -
Software Architect	$ -
Software Development Engineer	$ -
Software Development Manager	$ -
Software Lead	$ -
Software Programmer I	$ -
Software Programmer II	$ -
Software Programmer III	$ -
System Administrator	$ -
System Analyst	$ -
Systems Engineer	$ -
Technical /Software Development Manager	$ -
Technical Writer	$ -
Training Manager	$ -

Sheet 7-1

Additional Services Rates (2016 Values)

Overhead including Burden	0.0000%
Profit	0.0000%
STAFF POSITION/CLASSIFICATION	LOADED HOURLY RATE
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -
	$ -

Note 1: CPI adjustments will be made to the Cost based on actual CPI change for the previous year beginning with Operations Year 2 as further described in the Price Proposal Instructions.

Exhibit D - Payment Schedule

A. Payments for Implementation Cashless Tolling System Design and Development					$ -
Payment Number	**Payment Milestone**	**Pay Items**	**% Paid**	**Cum.% Paid**	
A-1	Notice to Proceed	Notice to Proceed.	5.00%	5.00%	$ -
A-2	Cashless Toll System Development and Administration	Project Management Documents Approved (PMP, Project Schedule, QA Plan and SDP, SRD).	10.00%	15.00%	$ -
A-3	Cashless Toll System Design	Business Rules and Design Documents Approved (BRD and SDDD) .	15.00%	30.00%	$ -
A-4	Cashless Toll System Factory Acceptance Testing (FAT)	Test Documentation and Factory Acceptance Testing Approved.	15.00%	45.00%	$ -
A-5	Cashless Toll System Onsite First Installation Testing (OFIT)	Installation Plan Approved, Test Documentation and Onsite Integration Testing Approved - First Site.	10.00%	55.00%	$ -
A-6	Cashless Toll System Manuals and Training	Manuals Approved and Training Approved.	5.00%	60.00%	$ -
A-7	Cashless Toll System Commissioning - Findlay Connector	Installation and Commissioning Approved Ready for Go Live.	5.00%	65.00%	$ -
A-8	Cashless Toll System Commissioning - Southern Beltway	Installation and Commissioning Approved Ready for Go Live.	10.00%	75.00%	$ -
A-9	Cashless Toll System Acceptance	Operational and Acceptance Test Approved, As-builts Approved and Implementation Phase Closed Out.	25.00%	100.00%	$ -

B. Payments Related to Hardware, Equipment and Off-the-Shelf Software				
Payment Number	**Payment Milestone**	**% Paid**	**Cum.% Paid**	
	Findlay Connector			**$ -**
B-1	Ordering Verified Findlay Connector	20.00%	20.00%	$ -
B-2	Purchased, Received and Verified Findlay Connector	60.00%	80.00%	$ -
B-3	Installation Approved Findlay Connector	20.00%	**100.00%**	$ -
	Southern Beltway			**$ -**
B-4	Ordering Verified Southern Beltway	20.00%	20.00%	$ -
B-5	Purchased, Received and Verified Southern Beltway	60.00%	80.00%	$ -
B-6	Installation Approved Southern Beltway	20.00%	**100.00%**	$ -