



Pennsylvania
Turnpike
Commission

Open Road Electronic Toll Collection System on Interstate 80 in
Pennsylvania
August, 2008
Final

REQUEST FOR PROPOSALS FOR

Open Road Electronic Toll Collection System on Interstate 80 in Pennsylvania

ISSUING OFFICE

**Pennsylvania Turnpike Commission
Information Technology Department
Electronic Toll Collection Group**

RFP NUMBER

08-10340-1540

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PART I. GENERAL INFORMATION FOR PROPOSERS

I.1 PURPOSE

The Pennsylvania Turnpike Commission (hereinafter referred to as the “Commission”) is soliciting written responses from Proposers interested in participating in a contract to secure staffing, operations and management of a work force necessary to provide an Open Road Tolling (ORT) solution on Interstate 80 in Pennsylvania. The solution would include design and procurement and installation of all data and communication cabling between tolling zone and utility building, design, procurement and delivery of overhead ORT structures (gantries), design, procurement and installation of roadway equipment and sensors and for the design procurement and installation of distributed power from load centers to tolling equipment. It shall also include hardware, firmware and software, and Technical, Operational and Maintenance support in accordance with the information provided in this and other sections of this RFP.

I.2 ISSUING OFFICE

This RFP is issued for the Commission by: INFORMATION TECHNOLOGY DEPARTMENT, ELECTRONIC TOLL COLLECTION GROUP - The Project Manager for this project is Jeff White (Director of Electronic Toll Collection) 700 South Eisenhower Boulevard Middletown PA 17057, 717-939-9551, jwhite@paturndpike.com.

The issuing office shall be the sole point of contact in the Commission for this RFP. .

I.3 SCOPE

This RFP, including all its attachments, contains instructions governing the proposals to be submitted and the material to be included therein; a description of the service 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. Details regarding configuration and location of gantries tolling zone infrastructure are presented herein for bidding purposes and are subject to change.

I.4 PROBLEM STATEMENT

The required toll collection system is to be a computerized electronic toll collection system integrating Open Road Tolling (ORT) Tolling Zones, and the Commission’s Toll Host, located in the Central Offices of the Commission in Highspire, Pennsylvania. ORT shall be defined as the ability to classify and correctly associate vehicles with license plate images and or valid radio frequency account transponder holders over unobstructed un-channeled lanes and shoulders as defined further herein. The toll collection equipment will consist of mainline barrier systems; there are presently planned to be 10 tolling locations, with a minimum of 2 travel lanes in each direction of traffic on I-80.



Tolling zones will primarily consist of the type and configuration shown in Figure 1, however may include configurations as shown in Figure 2 and 3. Regardless of configuration, the tolling zone equipment will provide the following functionality:

- Electronic Toll Collection (ETC) which consists of Radio Frequency Identification (RFID) Antenna and Readers to operate with Vehicular mounted transponders, under the rules established by the Interagency Group (IAG) for the E-ZPass brand.
- Automatic Vehicle Classification (AVC) system(s) to count the number of vehicular axles.
- Video Image Capture (VIC) systems to identify as a minimum and the front and rear license plate image associated with the classified vehicle.

Each Tolling Zone will be equipped with a Digital Video Monitoring System (DVMS) which can associate a transaction message (plaza, lane, date, time, vehicle classification, and fare) with video images of the vehicle in near real-time.

All electronic toll collection and VIC transaction data, including, AVC systems, and DVMS, shall be transmitted to the Commission's toll host, Customer Service Center and or violations/video image Processing Center. The transaction data and video information is then routed to other systems, such as toll audit offices, maintenance and historical data files etc. Electronic toll collection transactions, either E-ZPass or Video Tolling, are sent to the Commission's Customer Service Center (CSC) for processing. Violation transaction data shall be transmitted to the Commission's Violation Processing Center (VPC) for processing. A central Maintenance Online Monitoring System (MOMS) is also to be provided. The functional and performance requirements for the system are described in PART V of the RFP.

I.5 TYPE OF CONTRACT

The Commission may execute a contract with the responsive and responsible Proposer who's technical and price proposal are determined to be the most advantageous to the Commission. It is proposed that if a contract is entered into as a result of this RFP, it will be a Cost Plus Fee basis (CPF) contract. The Commission may in its sole discretion undertake negotiations with Proposers whose proposals to price and other factors show them to be qualified, responsible, and capable of performing the work. Execution of a contract is contingent upon Federal Approval of Tolling Interstate 80.

I.6 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.



I.7 SUBCONTRACTING

Any use of subcontractors by a Proposer must be identified in the proposal. During the contract period use of any subcontractors by the selected Proposer that were not previously identified in the proposal must be approved in advance in writing by the Commission.

A firm that responds to this solicitation as a prime may not be included as a designated subcontractor to another firm that responds to the same 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 contractor responding to the project advertisement.

I.8 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.

I.9 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 under the original RFP document. 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. If the Commission revises a published advertisement less than ten 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.

I.10 QUESTIONS AND ANSWERS

Written questions may be submitted to clarify any points in the RFP which may not have been clearly understood. Written questions should be submitted to the Issuing Office at the address indicated above to be received no later than **Friday August 15, 2008 12:00 noon (EST)**. All questions and written answers will be issued as an addendum to and become part of this RFP.



I.11 RESPONSE

To be considered, proposals must be delivered to the Pennsylvania Turnpike Commission's Contracts Administration Department, Attention: Donald Klingensmith on or before Monday, September 15, 2008 by 12:00noon EDT. The Pennsylvania Turnpike Commission is located at 700 South Eisenhower Boulevard, Middletown, PA 17057 (Street address). The mailing Address is P. O. Box 67676, Harrisburg, PA 17106.

Please note that use of U.S. Mail delivery and/or private mail carrier does not guarantee delivery to this address 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.

I.12 PROPOSALS

Responding firms will be required to submit a Technical Proposal along with a Price Proposal for the requested scope of work and services. The Technical Proposal, Price Proposal, and other required materials are due by the submittal deadline date and time identified herein. The Technical and Cost Proposal shall be prepared in accordance with this RFP and other attachments referenced by or included within this RFP.

To be considered, Proposers should submit a complete response to this RFP, using the format provided in PART II. The Proposer shall submit ten (10) copies of both the Technical Proposal and Price Proposal, one (1) copy of which will be unbound, all copies to be in a sealed envelope or package. The Cost Proposal and Proposal Guarantee shall be placed in a separate sealed envelope within the sealed proposal, separate from the technical submittal. The Proposer shall also submit electronic files on CD, in Microsoft Word and Microsoft Excel or Adobe pdf files. This data shall be submitted in accordance with the scheduled submittal deadline date and time. The Commission reserves the right to make additional copies of this material for its own use during the evaluation process. No other distribution of proposals will be made by the Proposer. Each proposal page should be numbered for ease of reference. Proposals must be signed by an official authorized to bind the Proposer to its provisions and include the Proposer's Federal Identification Number. For this RFP, the proposal must remain irrevocably valid for at least 180 calendar days following the submittal deadline date identified herein. Moreover, the contents of the proposal of the selected Proposer will become contractual obligations if a contract is entered into.

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 telephone facsimile (fax) notice received at the Commission's address for proposal delivery prior to the



exact hour and date specified for proposal receipt. However, if the Proposer chooses to attempt to provide such written notice by fax transmission, the Commission shall not be responsible or liable for errors in fax transmission. A proposal may also be withdrawn in person by a Proposer or its authorized representative, provided its identity is made known and it signs a receipt for the proposal, but only if the withdrawal is made prior to the exact hour and date set for proposal receipt. 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 RFP.

I.13 ECONOMY OF PREPARATION

Proposals should be prepared simply and economically, providing a straightforward, concise description of the Proposer's ability to meet the requirements of the RFP.

I.14 DISCUSSIONS FOR CLARIFICATION

Proposers who submit proposals may be required to make an oral or written clarification of their proposals to the Issuing Office to ensure thorough mutual understanding and Proposer responsiveness to the solicitation requirements. The Issuing Office will initiate requests for clarification.

I.15 ORAL PRESENTATION

The Commission may require a responding firm to give an oral presentation of their firm's Technical Proposal and approach to the Scope of Work and Services as soon as ten (10) days after the proposal response due date. The Issuing Office will limit oral presentations to responsible Proposers whose proposals the Issuing Office has determined to be reasonably susceptible of being selected for award.

I.16 BEST AND FINAL OFFERS

The Issuing Office reserves the right to conduct discussions with Proposers for the purpose of obtaining "best and final offers." 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 c) request revised proposals. The Issuing Office will limit any discussions to responsible Proposers whose proposals the Issuing Office has determined to be reasonably susceptible of being selected for award.

I.17 PRIME PROPOSER RESPONSIBILITIES

The selected Proposer will be required to assume responsibility for all services offered in its proposal 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.

I.18 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.



If a contract is executed, however, the successful proposal submitted in response to this RFP shall be subject to disclosure. 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.

I.19 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, other than the position of its proposal in relation to all other proposals.

I.20 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.

I.21 COST SUBMITTAL

The cost submittal, Attachment A, and Proposal Guarantee shall be placed in a separately sealed envelope within the sealed proposal and kept separate from the technical submittal. Failure to meet this requirement may result in disqualification of the proposal. Cost sheets submitted are for evaluation purposes only and final costs shall be negotiated with the successful Proposer.

I.22 TERM OF CONTRACT

The Term of the Contract will commence on the Effective Date (as defined below) for a period of 10 years, with up to two (2) five (5) year renewable extensions for maintenance. . 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.

I.23 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 cover letter to 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 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



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including, but not limited to, taxes, unemployment compensation, and workers' compensation liabilities.



PART II. INFORMATION REQUIRED FROM PROPOSERS

Proposals must be submitted in the format, including heading descriptions, outlined below. To be considered, the proposal must respond to all requirements in this part of the RFP. Any other information thought to be relevant, but not applicable to the enumerated categories, should be provided as an Attachment to the proposal. Each proposal shall consist of two (2) separately sealed submittals. The submittals are as follows: (i) Technical Submittal, in response to Sections II 1 through II 7 hereof; (ii) Cost Submittal, in response to Section II 8 hereof.

The Commission reserves the right to request additional information which, in the Commission's opinion, is necessary to assure that the Proposer's competence, number of qualified employees, business organization, and financial resources 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 agreement and to complete the work specified.

II.1 EXECUTIVE OVERVIEW

The Technical Proposal Executive Overview shall include, but not be limited to, general information on the requirements of the Scope of Work and Services, a brief summary of the project, its purposes, objectives, and a statement and analysis of any basic problems with the Proposer's recommended solution (not to exceed 10 pages in length).

The Proposer shall provide a clear, concise analysis of the toll systems technologies proposed. In addition, this Executive Overview section should identify those elements of the Proposer's Technical Proposal that distinguish it as the Proposer of choice.

II.2 PRIOR EXPERIENCE

Proposers should include in the Proposal their experience in the design, development, installation, and maintenance of toll collection systems with focus on field equipment for Open Road Tolling Systems. Experience shown should be work done by individuals who will be assigned to this project as well as that of your company. Studies or projects referred to should be identified and the name of the customer shown, including the name, address, and telephone number of the responsible official of the customer, company, or agency who may be contacted.

II.3 PERSONNEL

Include the number, and names where practicable, of executive and professional personnel, analysts, auditors, researchers, programmers, consultants, etc., who will be engaged in the work. Show where these personnel will be physically located during the time they are engaged in the



work. Include through a resume or similar document education and experience in the development, installation, and maintenance of field equipment for an Open Road Electronic Toll Collection System. Indicate the responsibilities each will have in this project and how long each has been with your company. Identify subcontractors you intend to use and the services they will perform.

II.4 SYSTEM DESCRIPTION

The Proposer shall provide a detailed Sequence of System Operation description. The Sequence of System Operation shall define input sensor device types intended for use on this project, the function of each of the in lane devices, anticipated output from each in lane device, description of how and where the device outputs will be processed; processor device types anticipated to be used and the function of each of the anticipated outputs from each processing device, and description of how and where the processed data is stored and communicates to other input devices all as required to form a valid framed transaction message. The narrative shall be developed to sequentially describe all devices and actions required and expected, as a vehicle approaches and proceeds through each of the lane types specified in order to demonstrate proposed system ability to properly frame the Automatic Vehicle Classification (AVC), Automatic Vehicle Identification (AVI), and Video Image Capture (VIC) to form a valid accurate transaction. The narrative shall demonstrate the sequential formation of the transaction message based on in lane devices, such as axle counters, vehicle separators, Radio Frequency Identification (RFID) devices, AVC, Image Trigger and capture, Processors (Lane Controller / Plaza PC) and Connectivity between site and central locations. The sequence shall discuss timing and buffer variables and latency considered in the Proposer's solution process as well as system reset parameters to address device failure or incorrect input. In this section the Proposer shall also describe the redundancies incorporated in the system to enhance system reliability and availability.

II.5 PROJECT MANAGEMENT

The Technical Proposal shall contain a project management section that shall include, but not be limited to, the management organization, and show the position of the project manager and project group in the overall company organization. Organization charts shall be provided showing the relationship of the project manager to the corporate manager(s). This Project presents several challenges, including its required mix of experience, technical skills and organizational expertise as well as its demanding schedule. The section should discuss these challenges and others presented by this Project and how the Proposer would succeed despite them.

The Proposer shall provide information on the management personnel assigned to this project, the percent of time that each one will apply to this project and the effort top management will commit toward support of this project.

In addition, the Technical Proposal shall provide information on the Proposer's quality assurance, quality control, and reliability programs, engineering programs, systems engineering



experience and other data that will assist the Commission in the evaluation of the Proposer's project management capabilities.

II.6 TECHNICAL REQUIREMENTS

In this section, the Proposer shall demonstrate the ability to meet the requirements defined in PART V and PART VII of this RFP. This section of the Technical Proposal shall be organized to conform to the RFP paragraph by paragraph to each corresponding section in the RFP. The Proposer should follow the proposal sequence and format, responding to the section or requirement as to whether the proposed system satisfies the RFP's intent expressed in that section or not. Responses that clearly describe how the requirements will be satisfied will be rated more favorably; responses that simply repeat the words in the RFP or simply state that the proposed system will provide what the section asks for, will not. Other materials, which may improve the quality of the response, should be included as items attached to this section in a separate Attachment.

The Proposer shall also include the design of overhead structures (gantries) required for the proposed ORT solution and footprint showing the extent of reinforced concrete removal and gantry spacing relationship within the removal footprint. The Gantry design(s) should include all structural calculations, based on AASTO design parameters and should be signed and sealed by a registered Pennsylvania P.E and available to be immediately released by the successful Proposer for fabrication after approval by the Commission upon issuance of a Notice to Proceed.

II.7 DBE/MBE/WBE PARTICIPATION

The Turnpike Commission is committed to the inclusion of disadvantaged, minority, and woman firms in contracting opportunities. The minimum participation level for DBE/MBE/WBE's in this contract will be 10% total. Responding firms shall clearly identify DBE/MBE/WBE firms, expected to participate in this contract, in their Proposal. If the selected firm does not meet the minimum requirement for DBE/MBE/WBE participation, they will be required to demonstrate good faith efforts to achieve the required level. Proposed DBE/MBE/WBE firms must be certified by the PA Unified Certification Program, PA Department of General Services, National Minority Supplier Development Council (NMSDC), Women Business Enterprise National Council, U.S. Small Business Administration 8(a) small disadvantaged business concerns

or the Department of General Services at the time of the submission of the proposal. If further information is desired concerning DBE/MBE/WBE participation, direct inquiries to the Pennsylvania Turnpike Commission's Contract Administration Department by calling (717) 939-9551 Ext. 4241.

II.8 COST SUBMITTAL

The information requested in this section shall constitute your Cost Submittal. The Cost Submittal shall be placed in a separate sealed envelope within the sealed proposal, separate from the technical submittal.



Proposers should not include any assumptions in their cost submittals for Phases I through Phase IV. For Phases V through Phase VII the Proposer shall provide breakdowns on how costs were derived. Proposers should direct in writing to the Issuing Office pursuant to PART V through PART VIII of this RFP any questions about whether a cost or other component is included or applies as described in section I.9 of this RFP. All Proposers will then have the benefit of the Issuing Office's written answer so that all proposals are submitted on the same basis.

The Price Proposal shall be prepared in accordance with the instructions herein and as show in Attachment A, Price Provisions. The Price Proposal is subject to negotiation.

In preparation of the Price Proposal, the Proposal shall utilize the sample labor rates shown in Attachment C – Prevailing Wages. Actual Wage Rates for the counties and municipalities where the toll zone construction will occur will be made available to the Proposer, prior to Contract negotiations and award.

Any costs not provided in the cost proposal will be assumed as no charge to the Commission.

The selected Proposer shall only perform work on this 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 selected Proposer shall not start the performance of any work prior to the date set forth in the Notice of Proceed and the Commission shall not be liable to pay the selected Proposer 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 this Contract.

II.9 PROPOSAL GUARANTEE

Information regarding the Proposal Guarantee/Surety Bond will be provided at a later date.



PART III. CRITERIA FOR SELECTION

III.1 MANDATORY RESPONSIVENESS REQUIREMENTS

To be eligible for selection, a proposal must be (a) received prior to the deadline time and date specified herein; (b) properly signed by the Proposer; and (c) formatted such that all cost data is kept separate from and not included in the Technical Submittal.

The Proposer's Technical Proposal shall be sufficiently detailed and documented to enable the Commission to review and ascertain that the Proposer has the necessary means to meet the requirements of this RFP and the Contract.

The Proposer shall be solely and completely responsible for the satisfactory completion of the project.

The Commission may require a responding firm to give an oral presentation of their firm's Technical Proposal and approach to the Scope of Work and Services. If required to give an oral presentation, the firm will also be required to participate in a question/answer session. The Commission's questions will be used to clarify the Commission's understanding of the information conveyed in the Proposer's Technical Proposal, Price Proposal, and other submittals required by the RFP. The Commission will use a random drawing system to determine the order in which firms will give their oral presentation, if held. The Commission's Evaluation and Selection Committee will participate in all oral presentations.

Following the oral presentations, if conducted, the Commission's Evaluation and Selection Committee will complete its evaluation of the responding firms by preparing a written summary evaluation of each firm's approach and capabilities.

III.2 PROPOSAL EVALUATION

Proposals will be reviewed and evaluated by a committee of qualified personnel selected by the Commission. This committee will recommend for selection the proposal that most closely meets the requirements of the RFP and satisfies Commission needs. Award will only be made to a Proposer determined to be responsive and responsible.

III.3 EVALUATION CRITERIA

The following criteria will be used in evaluating each proposal:

- a. **Understanding of the Problem.** This refers to the Proposer's understanding of the Commission needs that generated the RFP, of the Commission's objectives in asking for the services or undertaking the study, and of the nature and scope of the work involved.
- b. **Proposer Qualifications.** This refers to the ability of the Proposer to meet the terms of the RFP, especially the time constraint and the quality, relevancy, and time frame of when



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studies and projects were most recently completed by the Proposer. This also includes the Proposer's financial ability to undertake a project of this size.

c. **Personnel Qualifications.** This refers to the competence of professional personnel who would be assigned to the job by the Proposer. Qualifications of professional personnel will be measured by experience and education, with particular reference to experience on studies/services similar to that described in the RFP. Particular emphasis is placed on the qualifications of the project manager.

d. **Soundness of Approach.** Emphasis here is on the techniques for collecting and analyzing data, sequence and relationships of major steps, and methods for managing the service/project. Of equal importance is the quality of the technical solution and whether the technical approach is completely responsive to all written specifications and requirements contained in the RFP and if it appears to meet Commission objectives.

e. **Client References.** This refers to past clients for whom the Proposer has done similar types of work. The company names, client contacts and success stories can be included here. This area speaks to the Proposers competency in completing a project similar to the one requested in this RFP.

f. **Cost.** 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.



PART IV. - WORK STATEMENT

The work to be provided under this project is for the design, development, furnishing, installation, and maintenance of a complete, functional Open Road electronic toll collection system incorporating *E-ZPass* readers, an Automatic Vehicle Classification (AVC) subsystem, a Video Image Capture (VIC) system and a DVMS Digital Video Management System and MOMS (Maintenance Online Management System) for 10 tolling locations, with a minimum of 2 travel lanes in each direction of traffic on Interstate 80 in Northern Pennsylvania. The work scope also includes a one (1) year warranty- corrective/preventative maintenance period, a ten (10) year warranty-corrective/preventative maintenance period and two (2) separate five (5) year warranty-corrective preventative maintenance periods, each additional five year period at the sole option of the Commission.

IV.1 OBJECTIVES

- a. General - The Commission seeks a qualified Toll Integrator with a proven track record of successful design, development, installation and maintenance of functional Electronic Toll Collection systems to be installed at 10 tolling locations, with a minimum of 2 travel lanes in each direction of traffic on Interstate 80 in Pennsylvania.
- b. Specific - Under the supervision and direction of the Commission, the completion of all work required to successfully design, develop, install and maintain a fully Electronic Toll Collection system that properly identifies customers and charges a proper fare for the length of travel, as well as handles those customers who do not make proper payment.

IV.2 NATURE AND SCOPE OF THE PROJECT

Background:

The Turnpike is a key transportation route within the state of Pennsylvania and a vital link to the eastern United States. The Commission operates 536 miles of roadway with 60+ fare collection facilities, 20 service plazas, 2 welcome centers, 21 maintenance buildings, 8 police barracks and 5 tunnels. For more information, go to www.paturndpike.com.

Act 44 was passed by the Pennsylvania legislature in July 2007, establishing for the first time ever, an inflation sensitive, long-term funding stream to address Pennsylvania's transportation funding crisis. The Act provides more than \$116 billion over a 50-year period for transportation maintenance and improvements in Pennsylvania by:

- Converting I-80 to a tolled facility,
- Increasing existing Mainline Turnpike Tolls, and
- Issuing Monetization Bonds based on future toll revenues.

Scope of the Project:



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Open Road Electronic Toll Collection System on Interstate 80 in
Pennsylvania
August, 2008
Final

As a result of Act 44 the Commission has been tasked to convert I-80 to a tolled roadway and therefore seeks the services of a proven Toll Integrator to design, develop, install and maintain an entirely Electronic Toll Collection System to include 10 tolling locations, with a minimum of 2 travel lanes in each direction of traffic spread out across the 310 miles of Interstate 80, an east-west major route of travel in northern Pennsylvania.



PART V. FUNCTIONAL/PERFORMANCE REQUIREMENTS

V.1 GENERAL REQUIREMENTS

The Open Road Tolling Collection System shall be developed, tested, and installed in adherence with the scheduled opening dates for I-80. The present projected opening date is for third quarter of 2010.

The selected Proposer will be responsible for successfully designing, testing, and implementing the software and hardware to provide for the operational requirements of this RFP. Final acceptance of the system will be measured against full compliance with the functional and operational requirements of the RFP.

This project, for the provision of a Open Road Toll Collection System for the new facilities is discussed in two major parts as follows and shall consist of, but is not necessarily limited to, the following work:

- Provision of the equipment and systems required for those facilities:
 - Design, development, testing, and installation of a complete and fully functional Open Road Tolling System that shall include roadside and gantry-mounted equipment that will process *E-ZPass* transactions and capture video images suitable for reliable accurate revenue collection;
 - Software for Commission workstations to monitor operations at each Open Road Tolling Zone;
 - Provision of system documentation including plans, reports, specifications, design documents, etc. as described later in this document;
 - Training;
 - Any and all necessary work to integrate the ORT Field Equipment with the customer account/video account/violation processing systems and the Commission's Toll Host.
- Maintenance and operation of the ORT Field Equipment for the contracted operations period;
 - Maintenance (24/7) of all provided equipment and software over the life of the Contract;
 - MOMS (Maintenance Online Management System)
- Participation in monthly progress meetings with the Commission; and



- Any and all necessary services, equipment, and software that are required to render the system complete and fully operational as described herein.

The Contractor's Tolling Zone design shall ensure that all overhead mounted equipment provides the federally mandated minimum vertical clearance for Interstate Highways in rural areas for vehicles passing beneath, currently 16 feet plus 6 inches plus an additional 6 inches to provide for future re-surfacing or 17 feet total.

V.2 ORT ROADWAY FACILITY

The road facility on which the ORT Field Equipment is to be installed under this project is Interstate 80 within the Commonwealth of Pennsylvania. This roadway runs in an east-west direction across the state. It is approximately 310 miles in total length. Ten (10) tolling locations, with a minimum of 2 travel lanes in each direction of traffic on I-80, are to be furnished, installed, tested and proven to be accurate and reliable.

V.3 TOLLING ZONE RESPONSIBILITIES

The Commission will arrange for the installation of much of the infrastructure at the Tolling Zone for the Contractor's use. The overall breakdown of responsibilities for the Open Road Tolling Zone design and implementation is summarized below in Table 1. The Contractor shall manage, plan, execute, and control all aspects of its Tolling Zone work activities in coordination with and so as to minimize interference with others working on other aspects of systems installation or roadway construction. The Contractor shall coordinate planning with such parties working at the site or using the right of way for movement of materials in the scheduling of a period for each of Tolling Zones during which the Contractor shall conduct most of its on-site work. All Tolling Zones will open to tolled traffic simultaneously. Based on the schedule, the installation period is expected to be of limited duration and it is assumed the Contractor will need to employ multiple installation crews to satisfy the demanding schedule requirements; a need for a minimum of three installation crews should be anticipated and planned for.



Table 1 - Open Road Tolling Zone Provision/Installation Responsibility Summary

Item #	Work Item	Responsible Party ⁽¹⁾
1.	Design and development of the overall Open Road Tolling zone, footprint and lane configurations.	Contractor
2.	Specify whether Tolling Zone system design requires the absence of rebar in the pavement and if so how large a segment of roadway must be rebar-free.	Contractor ⁽²⁾
3.	Remove existing concrete and rebar in the Tolling Zone and replace with bituminous material	Commission/Others
4.	Construct suitable tolling zone building to house roadside equipment	Commission/Others
5.	Obtain geologic boring data at the gantry footings construction points sufficient to design gantry footings.	Commission/Others
6.	Submission of Tolling Zone templates. These templates need to include the gantry span and the spacing between the gantry support structures and the location of the DVMS pole. This information will be used by the Commission/Others to start developing the tolling zone site plan and the foundation designs. This submission needs only to show a template for each typical section shown in TOLLING ZONE CONFIGURATIONS (Figures 1 & 3).	Contractor ⁽²⁾
7.	Provide the design and fabrication of gantries - location, quantity, hand holes, equipment mounts, penetrations, threaded conduit holes, base plate details and design loads etc.	Contractor ⁽²⁾
8.	Design gantry footings in coordination with the Contractor after completion of Items 6 & 7 above.	Commission/Others
9.	Furnish and construct gantry footings	Commission/Others



Table 1 - Open Road Tolling Zone Provision/Installation Responsibility Summary

Item #	Work Item	Responsible Party ⁽¹⁾
10.	Design, procure, and deliver gantries to Commission-specified staging areas (probably directly to the individual Tolling Zone).	Contractor
11.	Install Gantries	Commission/Others
12.	Provide the Commission with electrical service requirements for all Contractor-installed equipment. Provide the design and requirements for the installation of conduit to the gantry structures, roadside equipment/cabinets/building structures on the gantries and in the roadway pavement for ETC, VES, Digital Video Monitoring System, and AVC equipment.	Contractor ⁽²⁾
13.	Provide the rectangular floor space requirements (LxW), cabinet height requirements, wall space requirements and rack and cable tray layout for the Contractor-installed equipment that is to be placed in the Tolling Zone building. Include space necessary for installation/maintenance access to the cabinets.	Contractor ⁽²⁾
14.	<p>Within the tolling zone, design conduit system from the building to the gantry structures and the DVMS camera, on the gantries and the DVMS pole as well as in the roadway pavement and utility building for ETC, VIC, AVC MOMS and DVMS.</p> <p>Design, furnish and install cabling data, communications and video, to and within gantry structures, on the gantry and in the roadway pavement and the tolling zone building for ETC, VIC, AVC, MOMS and DVMS.</p> <p>Design, furnish and install power (UPS power and non-UPS power between all ETC, VIC, AVC, MOMS and DVMS equipment and the load centers.</p>	Contractor
15.	Installation of conduit and load centers.	Commission/Others



Table 1 - Open Road Tolling Zone Provision/Installation Responsibility Summary

Item #	Work Item	Responsible Party ⁽¹⁾
16.	Provision of crash mediation measures in the Tolling Zone.	Commission/Others
17.	Provide safe parking for maintenance vehicle.	Commission/Others
18.	Design, furnish and install any required in-pavement equipment and/or sensors.	Contractor
19.	Provide maintenance of traffic for Contractor's ORT-zone installation activities.	Commission/Others
20.	Coordinate maintenance of traffic with Commission/Others.	Contractor
21.	Coordination and oversight of items 19 and 20, above	Commission/Others
22.	Provide the Commission with Bill of Materials (BOM) for Commission purchase of IAG-compliant ETC equipment required to support Open Road Tolling Zone operations together with desired delivery locations and delivery dates.	Commission/Contractor
23.	Furnish IAG-compliant ETC readers and antennas for all Open Road Tolling Zones to the Contractor for the ETC subsystem.	Commission/Others
24.	Design, furnish and install all required mounting components for all of the ORT equipment.	Contractor
25.	Design, furnish and install all ORT equipment, including required license plate Illumination, except the IAG ETC equipment (which the Commission will furnish and the Contractor shall install). Design, furnish and install gantry equipment mounting fixtures/brackets needed for all gantry-mounted and pole-mounted equipment.	Contractor
26.	Provide uninterruptible power supply (UPS) at each ORT zone site.	Contractor



Table 1 - Open Road Tolling Zone Provision/Installation Responsibility Summary		
Item #	Work Item	Responsible Party ⁽¹⁾
27.	Provide standby power generator and automatic transfer switch at each ORT zone site.	Commission/Others
28.	Provide ongoing fuel for standby generators.	Commission/Others
29.	Monitor fuel supply of standby generators	Contractor
30.	Furnish and install utility power cables to the tolling zone building and tolling zone load centers.	Commission/Others
31.	Design, furnish, and install Digital Video Monitoring System including cameras, housings, mounting brackets, etc. and cabling between video camera and system electronics cabinet.	Contractor
32.	Provide and install Digital Video Monitoring System including mounting poles, equipment raceway and the cameras.	Contractor
33.	Termination of all cables and wiring to the Contractor-installed equipment and to Commission-provided routers for communication to central monitoring and processing facilities.	Contractor
34.	Furnish and install all routers and communication infrastructure for communication from the Tolling Zone to the central computer systems.	Commission/Others
35.	Perform testing of Open Road Tolling Zone systems and equipment in accordance with the test requirements in this RFP including the provision of all testing personnel, drivers, vehicles, etc.	Contractor
36.	Supply calculations to show bandwidth required to support all communications to/from each Tolling Zone and the other centralized processing elements of the System.	Contractor ^{(2) (3)}



Table 1 - Open Road Tolling Zone Provision/Installation Responsibility Summary		
Item #	Work Item	Responsible Party ⁽¹⁾
37.	Prepare any FCC required license applications for each Tolling Zone for the Commission to then submit.	Contractor
38.	Provision and installation of signs and lighting ⁽⁴⁾ in and approaching the Tolling Zones	Commission/Others

Notes:

- (1) Items indicated in the table as being the responsibility of the Commission/Others applies only to the gantries on Commission facilities. Responsibility for provision of those items for the Contractor's use for internal testing or for the Factory Acceptance Test rests with the Contractor.
- (2) This information is to be provided in the Proposal.
- (3) Note: the Contractor is cautioned that excessive bandwidth needs or overly conservative calculations are NOT acceptable.
- (4) Lighting design levels in and approaching the tolling zones will be coordinated with the Contractor immediately following NTP

V.4 TOLLING ZONE CONFIGURATIONS

Tolling will be implemented on I-80 (mainline) in both travel directions. 10 tolling locations, with a minimum of 2 travel lanes in each direction of traffic on I-80 are currently planned. Eight (8) of the tolling zones will have separate eastbound and westbound two (2) travel lane gantries. The remaining tolling zone pair will have a six (6) lane gantry spanning both the eastbound and westbound traffic. Currently it is anticipated that each Tolling Zone will incorporate two (2) or three (3) gantry support structures. The Proposer is asked to define in the Proposal the number and positioning of the support structures.

Figure 1 shows the typical section for the two (2) lane gantry locations. A minimum vertical clearance of 17'-0" shall be provided over roadway and shoulders for all gantries and gantry mounted equipment. Figure 2 shows the typical six (6) lane gantry as it will be configured after that section of roadway is expanded to three lanes in each direction; On opening day, the six (6) lane gantry shall be equipped to collect tolls with the opening day configuration (4 lanes plus shoulders). This opening day typical section is shown in Figure 3. The gantry design shall accommodate the repositioning of equipment when the roadway is expanded from four (4) lanes to six (6) lanes in the future.

The exact locations of the Tolling Zones are not currently identified. The Tolling Zones will be on the mainline roadway, The Tolling Zones in the two opposing traffic directions will not necessarily be adjacent to one another. Figures 4 thru 7 are conceptual plans illustrating typical tolling zone layouts with respect to the I-80 travel lanes.



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All travel lanes and shoulders of the highway shall be instrumented to provide the capabilities as indicated in Table 2 below:

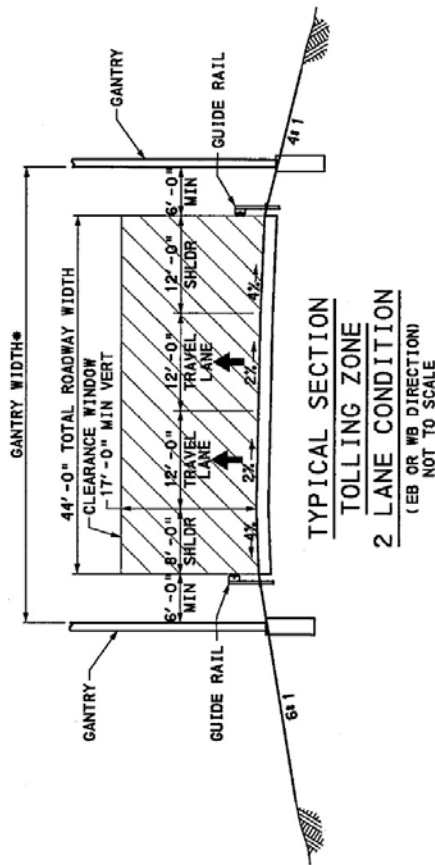


Table 2 - Capabilities Instrumented by Lane Type

Lane Types	ETC Transponder Reading	Video Image Capture	Automatic Vehicle Classification
Travel lanes	Yes	Yes	Yes
Left (inside) shoulder under Tolling Zone illustrated in Figure 1 (8' wide)	Yes	Yes	No
Left (inside) shoulder under Tolling Zone illustrated in Figure 2 (12' wide)	Yes	Yes	Yes
Left (inside) shoulder under Tolling Zone illustrated in Figure 3 (2' wide)	No	No	No
Right (outside) shoulders (12')	Yes	Yes	Yes

Design ORT gantry supports per “AASHTO 4th Edition Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals” (2001 with interims through 2003) and “AASHTO 17th Edition Standard Specifications for Highway Bridges” (2004).

ORT gantry support materials shall be provided in accordance with the Pennsylvania Department of Transportation Specifications Publication 408 and the General Provisions in Attachment B.



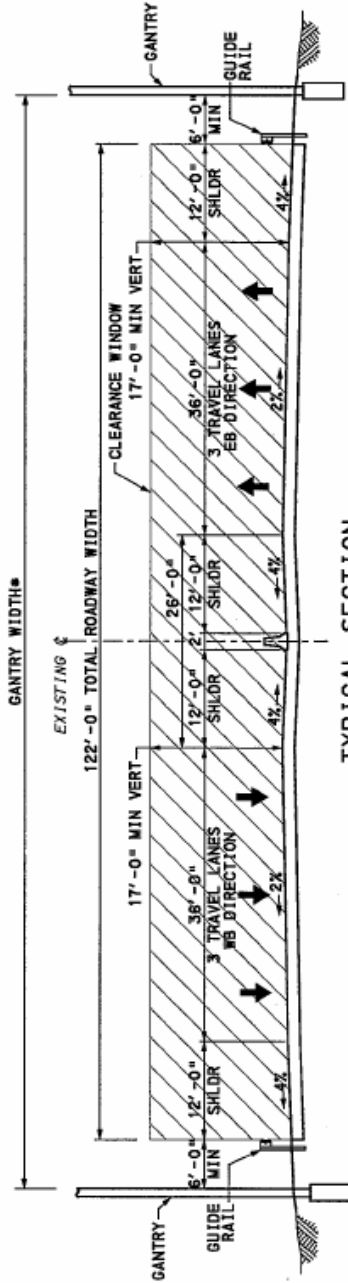
GANTRY WIDTH= TOTAL ROADWAY + 12' MIN OR ADDITIONAL WIDTH NEEDED FOR ANY TOP TUBE ROUNDING.

FIGURE #1



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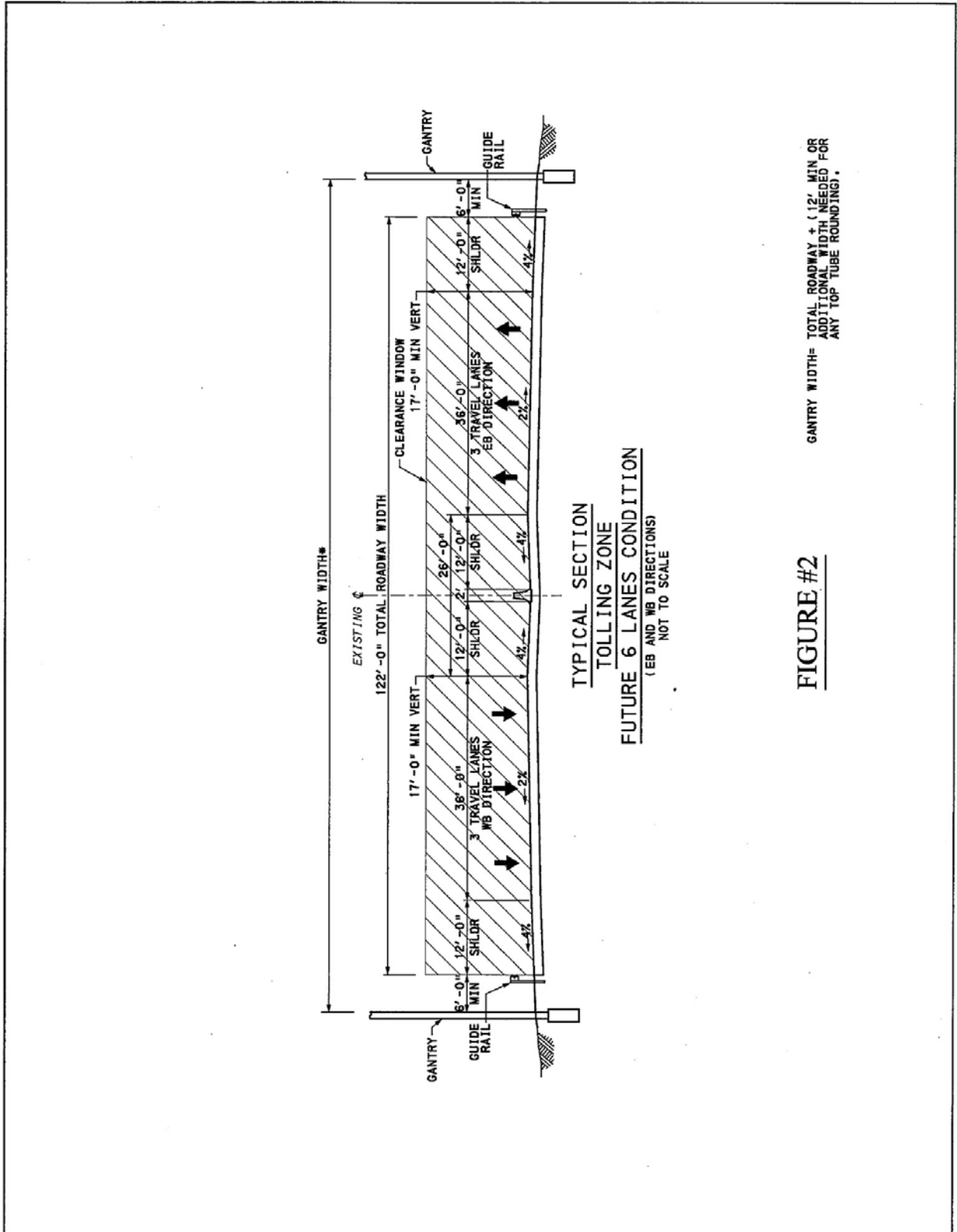
I-80 ROADWAY EQUIPMENT TECHNICAL REQUIREMENTS
JULY 2008



TYPICAL SECTION
TOLLING ZONE
FUTURE 6 LANES CONDITION
(EB AND WB DIRECTIONS)
NOT TO SCALE

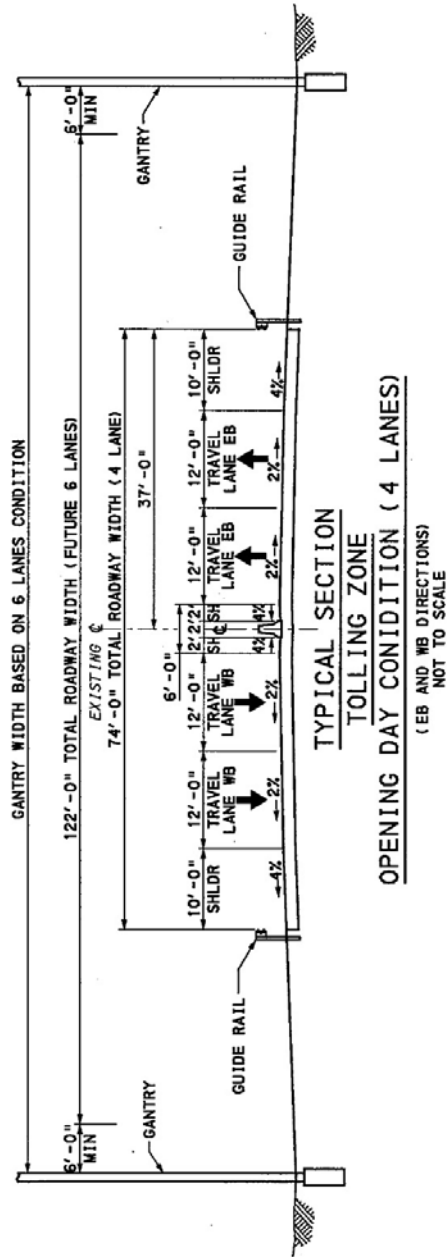
GANTRY WIDTH= TOTAL ROADWAY + (12' MIN OR
ADDITIONAL WIDTH NEEDED FOR
ANY TOP TUBE ROUNDING).

FIGURE #2



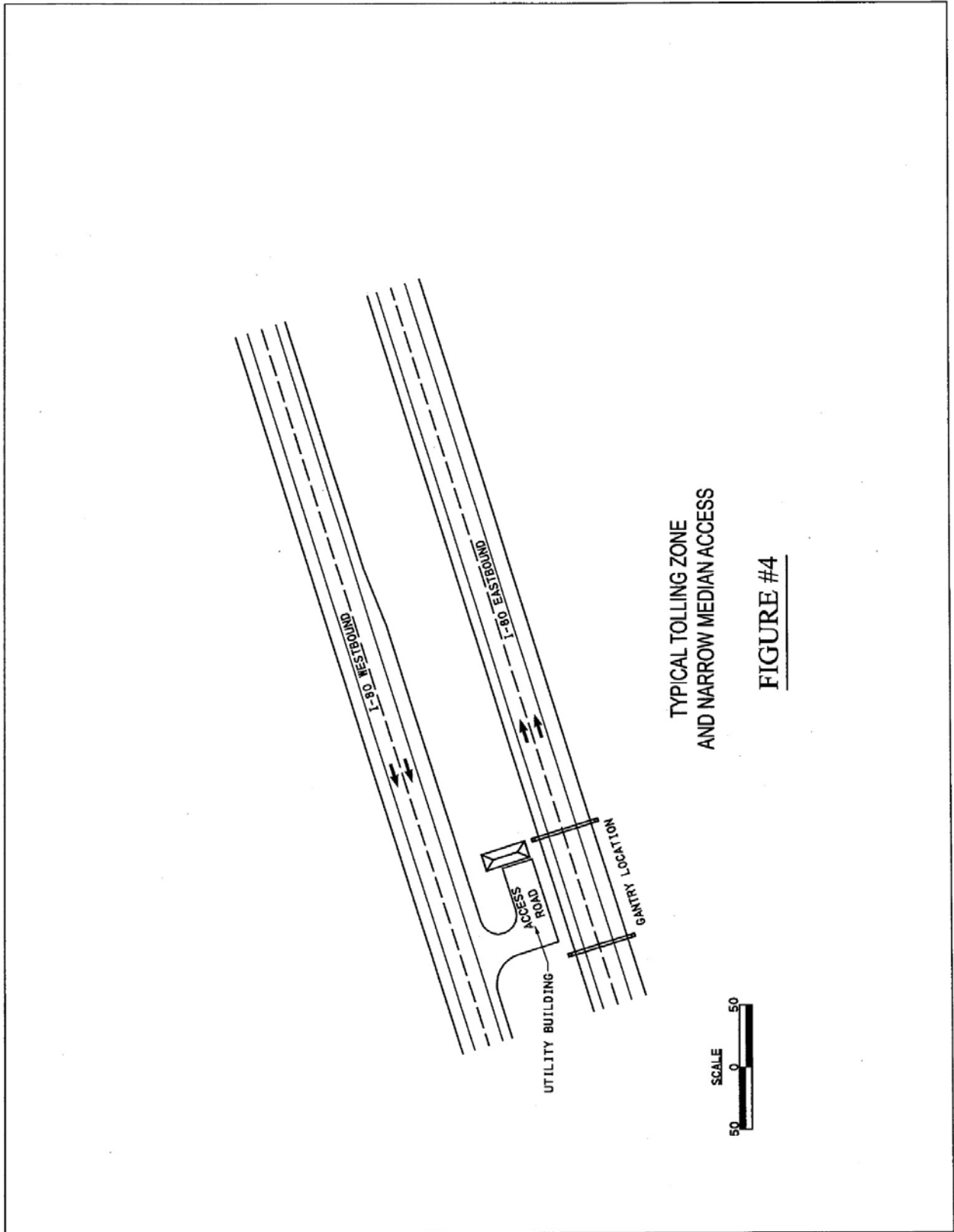
GANTRY WIDTH= TOTAL ROADWAY + (12' MIN OR ADDITIONAL WIDTH NEEDED FOR ANY TOP TUBE ROUNDING).

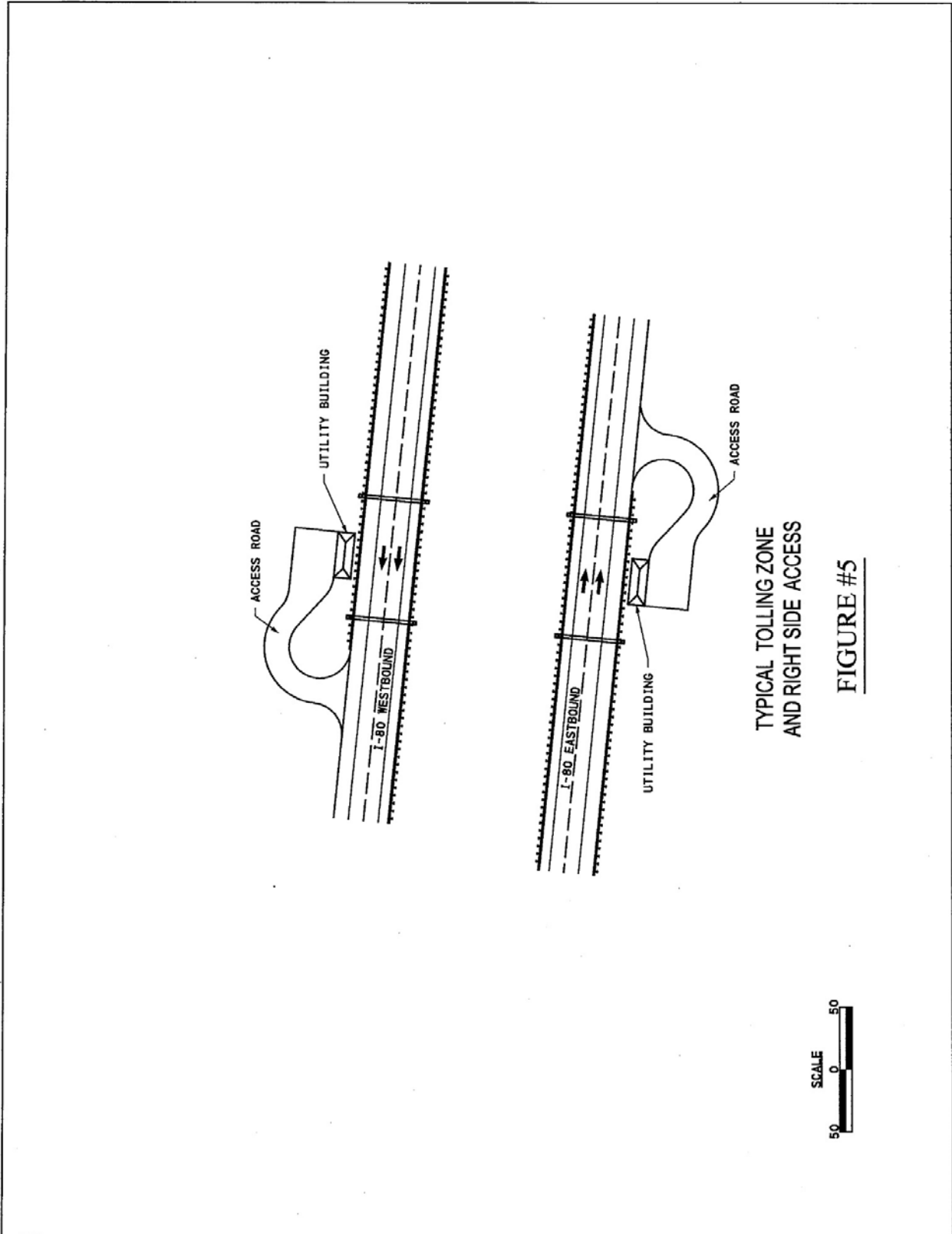
FIGURE #2

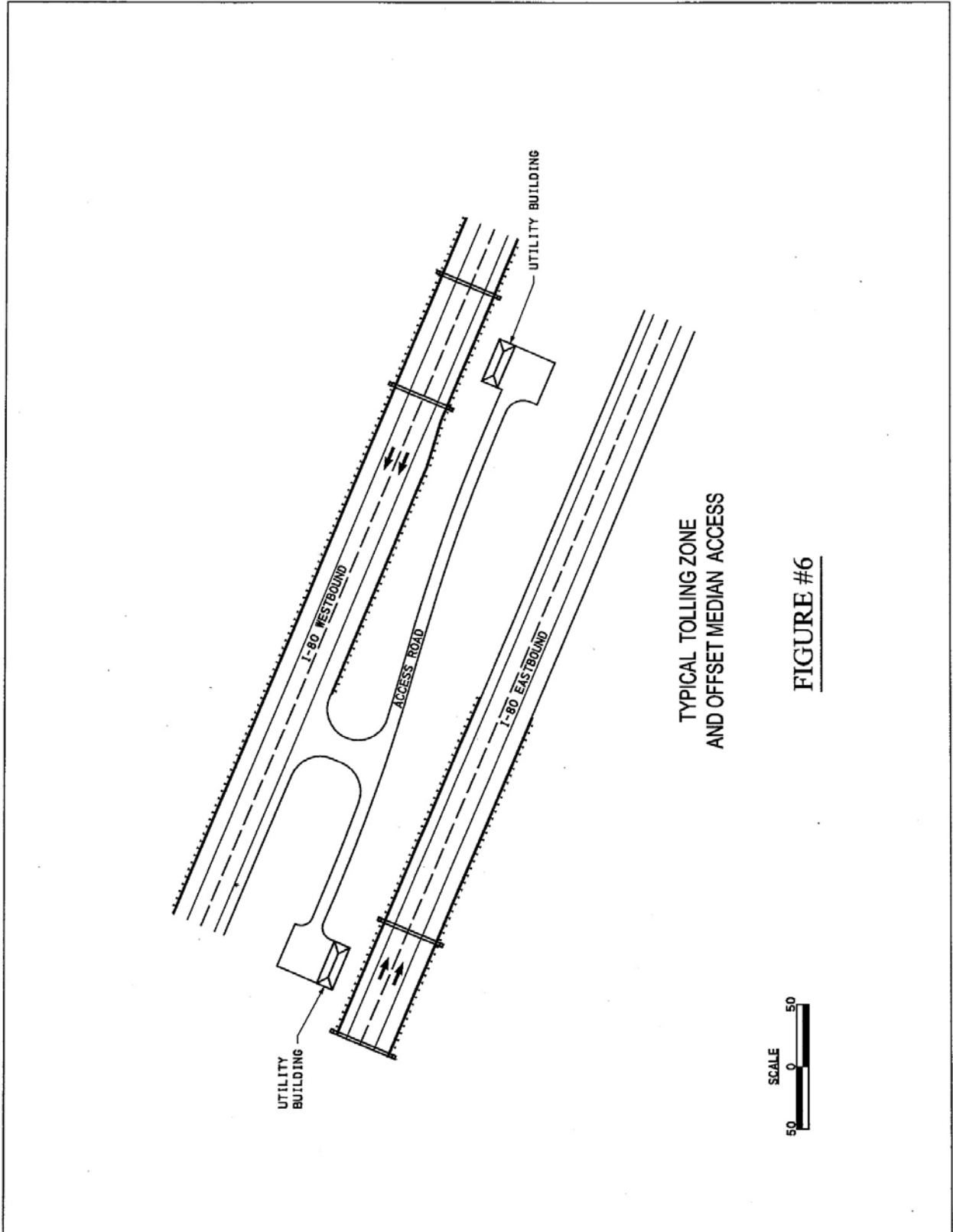


NOTE: THE GANTRY DESIGN SHALL ACCOMODATE REPOSITIONING OF EQUIPMENT WHEN THE ROADWAY IS EXPANDED FROM 4 LANES TO 6 LANES IN FUTURE.

FIGURE #3







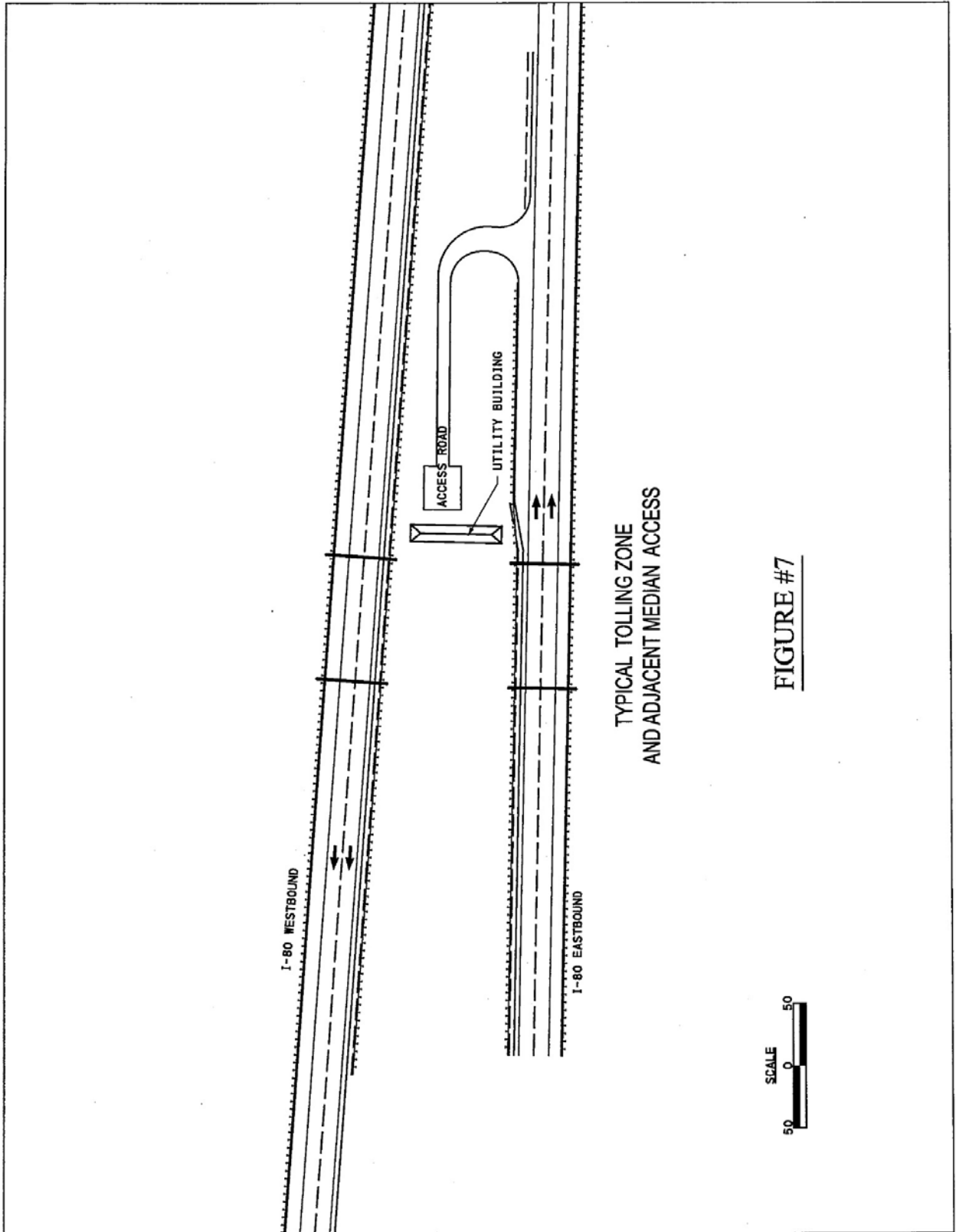


FIGURE #7



V.5 TOLLING ZONE OVERALL FUNCTIONAL REQUIREMENTS

The Tolling Zone System developed under this Contract shall have the following functional capabilities:

- All travel lanes and shoulders shall be instrumented for the capabilities as indicated in Table 2 to read *E-ZPass*SM transponders, to classify vehicles and to capture video images. The System shall correctly detect, classify, and associate vehicles passing through the Tolling Zone either on or between the traffic lanes or on or between the shoulder and shall correctly associate the vehicle with the correct classification and either an *E-ZPass*SM transaction or a video transaction.
- The System shall correctly read the transponder, and associate the vehicle and vehicle class regardless of the vehicle's position within the instrumented travel lanes and shoulders of the tolling zone and produce a toll transaction for vehicles that pass through the Tolling Zone.
- The System shall capture image(s) of the front license plate and image(s) of the rear license plate and associate the vehicle and vehicle class regardless of the vehicle's position within the instrumented travel lanes and shoulders of the tolling zone for vehicles where the read of a valid transponder does not occur;
- Supplemental lighting for vehicle license-plate image capture shall not distract motorists driving in either traffic direction nor shall it cause light pollution at Tolling Zones that are in proximity to neighborhoods;
- For every vehicle, the System shall record the measured classification of the vehicle; for *E-ZPass*SM transactions the System shall also record the vehicle class stored on the transponder
- The System shall communicate with the Commission's Toll Host to receive the tag status file, fare schedules, Flagrant Violation Alert lists, etc, in the current format transmitted by the Commission. ;
- The System shall communicate with the Commission's Toll Host to send all toll transaction data only for both *E-ZPass* and Video Customers and associated messages in the current formats received by the Commission.
- The System shall incorporate a VIC System to send all images and associated transaction records; these records shall include plaza, lane, date, time, and vehicle classification for both *E-ZPass* and Video Customers.
- The System shall be capable of operation for a minimum of 30 days without connection to the Commission's central computer systems and shall store all transaction and video data in the Tolling Zone computer system for transfer when communications is reestablished;
- The System shall be supplied with a battery backup UPS system that provides sufficient backup power until the backup generator takes over; the UPS shall provide a minimum fifteen (15) minutes of operation after loss of utility power;
- The System shall be fully redundant such that no single point of failure can result in the complete loss of toll collection or enforcement in any lane (failures due to severed/faulty cables are excluded from this requirement). See Section V.6; and
- The System shall self monitor all components and report all anomalies in real time via MOMS to be housed at the Contractor's location.



- MOMS alert messages shall be transmitted to the Commission's Toll Host in the Commission's current format.
- MOMS alert messages shall also be available for viewing to the Commission through access to a Graphical User Interface (GUI) interface provided by the Contractor.
- The Contractor shall respond automatically MOMS alerts to satisfy agreed upon system response times as defined in an approved Maintenance Plan.

V.6 SYSTEM REDUNDANCY AND RELIABILITY

As stated above the Tolling Zone System shall be configured so that no single failure will result in complete loss of toll collection ability for either *E-ZPass*SM or video tolling. The ORT subsystems are expected to have certain built-in redundancies. The Mark IV ETC Reader is fully redundant and in the case of the failure of a single antenna, an alternate antenna in an adjacent position is likely to read the transponder in a vehicle passing under the failed antenna. No further redundancy for the ETC subsystem is required. For the video image capture subsystem the failure of a single video camera shall not result in loss of the ability to capture plate images and will leave the remaining cameras in operation. If there are video processing elements that are common to the processing of every camera image these shall be configured so that no single failure causes an overall loss of video image capture.

The elements that need particular design attention regarding the single point of failure requirement are the AVC subsystem and the Tolling Zone Controller. The AVC subsystem may have two critical roles to perform which shall not be compromised by any single failure; the classification of vehicles shall continue to function during a failure though some degradation of performance level may be tolerable and if the AVC is used for this purpose the triggering for video image capture this function shall continue in non degraded operation through any single failure. The Tolling Zone Controller design (this includes any centralized aspect of the Tolling Zone system's operation) shall be such as to permit continued operation without any data loss or degradation in performance through any single failure.

V.7 OVERALL PROCESSING OF ORT TRANSACTIONS

The descriptions in this section are not necessarily intended to prescribe either the actual steps in processing transactions or their sequence but rather to generally describe what system performance is required.

V.7.1 ETC TRANSPONDER READING

An ETC subsystem shall be installed in each ORT zone. The ETC subsystem shall provide for communication between the vehicle-mounted transponders for vehicles and the RFID Reader and ORT zone controller(s). The Commission is a member agency of the IAG, so the ETC equipment shall support the use of IAG-approved Reader and Transponder Technology. IAG-approved ETC equipment currently is provided by Mark IV Corporation. The Contractor shall provide the Commission with a bill of material for the IAG equipment needed for each Tolling Zone (together with the single delivery address to which all such equipment is to be delivered plus the required delivery date(s)), and the Commission will arrange for its supply for the Contractor to install. The Contractor shall install all equipment within guidelines established by the manufacturer and the IAG to assure correct operational performance.



During the course of this Contract the ETC equipment designated by the IAG and used by the Commission may change. Contractor shall design the Tolling Zone controller and other ORT components to facilitate such a potential change as well as any transition period during which the use of multiple ETC readers supplied by the same or different manufacturers may be required. The cost associated with any such changed or additional ETC readers will, when it becomes known, be negotiated between the Commission and the Contractor.

The Contractor shall assist the Commission in acquiring any needed FCC licenses for the operation of the ETC equipment at the Tolling Zones, including the preparation of applications for Commission signature. The Commission will pay Federal Communications Commission (FCC) fees, if any are required, for filing these applications.

V.7.2 AUTOMATIC VEHICLE CLASSIFICATION

The Open Road Tolling facilities will use the vehicle classification approach summarized in Table 3, below

Table 3 - Vehicle Class Determination for Open Road Tolling		
Class	Description	# of Axles
1	Two-axle vehicle	2
2	Three-axle vehicle or vehicle-trailer combination with a total of three axles.	3
3	Four-axle vehicle or vehicle-trailer combination with a total of four axles.	4
4	Five-axle vehicle or vehicle-trailer combination with a total of five axles.	5
5	Vehicle with six or more axles or vehicle-trailer combination with a total of six or more axles.	6 or more

The system shall store AVC vehicle class within the vehicle transaction record for all vehicles and shall not over or under classify vehicles because of an incorrect association of AVC classification with vehicle passage. The AVC subsystem shall not separate a single vehicle or a vehicle towing a trailer or trailers, into multiple vehicle transactions.

The AVC subsystem shall accurately classify vehicles under all weather and ambient-light conditions during periods of peak and off-peak travel times in compliance with performance requirements contained herein.

The tolling-zone controllers shall periodically assess the operational status of each AVC device. The Tolling Zone controller shall monitor the AVC to detect that any of the components have failed, are intermittent or degrading in performance level and shall report the severity and nature of any failure. The tolling-zone controller shall send messages to the Maintenance On-line Management System (MOMS) to record the condition and alert both Contractor maintenance personnel and PTC Network Control of the degraded condition. The Tolling Zone controller



shall flag each transaction that occurs when any component of AVI, AVC, or VIC is less than fully functional.

V.7.3 SPEED DETECTION

The Tolling Zone system shall measure the speed of travel of every vehicle passing under the gantry and shall record the measured speed in the vehicle's transaction record. The speed measurement shall be accurate within 1 mile per hour of the actual vehicle speed.

V.7.4 VIDEO IMAGE CAPTURE

The System shall capture and forward transaction data only for E-ZPass transactions, Video Transactions, and Violations in the current Commission formats to the Toll Host for processing. All video images (images of the area of the vehicle on which the front and rear license plates should be mounted) captured as well as the associated transaction information shall be forwarded to the Commission's Data Center.

Video Image Capture (VIC) equipment shall be installed to capture front and rear license-plate images in every Tolling Zone traffic lane and in specified instrumented shoulders. The VIC equipment furnished by the Contractor shall include, but not be limited to, high speed, high resolution, progressive scan cameras including an environmentally protected housing, lens, high-speed shutter, and filter (as needed), violation triggering device(s), supplemental lighting, wires, cables and connectors, image processing software and hardware with Tolling Zone equipment and network or server interfaces, mounting brackets, plates and components, and all other items necessary for image capture and reporting. These equipment and materials shall be designed, procured, integrated, installed and tested to receive a signal or message when and where a violation has occurred, detect an accurate position of the front and rear license plate of the vehicle and capture the appropriate images. The video system shall capture digital images of the vehicle's front and rear license plates. The number of images shall be as needed to ensure the capture of one or more readable license-plate images. The System shall acquire for possible human review the number of front images and rear images for each vehicle so as to satisfy the readable image capture success rates specified in Table 4 System Performance Requirements. Each image shall be captured at a time determined by the trigger mechanism and the measured vehicle speed to maximize the likelihood of capturing a readable image of the plate.

The system shall be capable of capturing human readable images of all license plates, including motorcycle plates. The Tolling Zone System shall process the captured images by OCR and shall forward the images and OCR results to the Commission's Data Center. The OCR results shall include the plate number and jurisdiction of issue plus the confidence level of the result.

The fields of view of adjacent cameras shall overlap sufficiently so as to prevent image loss for vehicle plates that pass midway between the centers of view of the cameras.

All video transactions involving Tolling Zones operating with defective equipment at the time of the violation shall code the transaction as to the type of equipment defect.



The average size of the video tolling transaction message must be restricted to 250,000 bytes or less. In responding to this section, Proposers are asked to indicate how low a limitation on average video transaction message size they can accept and still meet all the functional and performance requirements of this RFP.

V.7.4.1 OCR Image Processor

The OCR image processor shall receive, process, and store images sent by the Tolling Zone controller. The OCR process shall produce both plate number and jurisdiction of issue for all types of license plates including motorcycle plates. The OCR image processor shall be housed within each Tolling Zone within the utility building. The Proposer shall include in the RFP response a detailed description and explanation of how this process will function within the current requirements of this RFP

V.7.4.2 Cameras

The number of cameras provided, camera orientation, and camera resolution shall be sufficient to support the image capture and OCR requirements and support redundancy for camera failure. . Camera housings and cabling shall be designed to meet environmental requirements.

The likelihood of capturing a full-plate image for each violation shall be maximized by ensuring that adjacent camera views overlap sufficiently and that image sets from both of two adjacent cameras are captured whenever the vehicle position straddles their field of view.

V.7.4.3 Image Trigger

A reliable and accurate means of triggering the capture of images of the front and rear license plates of the vehicle shall be provided. The trigger device selected shall be capable of supporting the capture of vehicle images for vehicles traveling at any speed for vehicles that are in a single lane or straddle adjacent lanes or travel (or straddle) the roadway shoulder. Components of the AVC system may be used to trigger Tolling Zone image capture.

V.7.4.4 Supplemental License Plate Illumination

Supplemental lighting shall be provided, if the Contractor deems it necessary, to improve lighting deficiencies experienced at various times in the Tolling Zone lanes and enhance the quality of the captured images for OCR processing. Any supplemental lighting that the Contractor chooses to install shall be deployed within the current right-of-way and shall not create flashing or intense light to be visible from off the right-of-way.

VIC lighting design shall avoid blinding or otherwise impairing the vision of approaching motorists (cameras for front plate capture) and departing the Tolling Zone (cameras for rear plate capture). The VIC lighting design shall consider traffic in adjacent lanes and roads as well as traffic traveling in the opposite direction, as applicable. The lighting design shall incorporate automatic intensity adjustment of the light source based on ambient light as needed to assure uniform quality of captured images and successful OCR processing.



The VIC design shall incorporate provisions to actively monitor the status of the supplemental light source (working/not working) and report failures through to the MOMS system in a timely manner.

V.7.4.5 Flagrant Violation Alert

The Commission will provide a flagrant violator list. The System shall obtain the OCR result of vehicles passing through Open Road Tolling Zones in “real time”. If a match is obtained, the tolling zone controller will communicate with a predetermined e-mail distribution list of individuals alerting them as to the vehicle’s plate information plus the location and travel direction of the vehicle. Both the e-mail distribution list and the frequent violator list will be downloaded to the Tolling Zone System from the Toll Host.

The Proposer shall specify the maximum number of license plates and jurisdictions the proposed system will reasonably accommodate.

V.7.5 DIGITAL VIDEO MONITORING SYSTEM (DVMS)

The Contractor shall provide a camera mounted downstream of each Tolling Zone gantry. It shall be used to provide a continuous video feed of the traffic passing through the gantry. The transactions taking place in the Tolling Zone shall be recorded in the same window as the video image so as to enable the viewer to associate vehicles with transaction data and judge the overall apparent “health” of the system. The System time shall also appear on the video (month, day, year, hour, minute, and second). The data overlaid on the screen shall include the following information for each vehicle:

- Type of transaction - ETC or Video;
- Transponder Number and Transponder Class (if an ETC transaction); and
- AVC Class.
- Tolling Zone (Plaza ID)
- Lane

The camera shall be positioned such that the front of a 50-foot vehicle will still be in the camera’s view for at least an additional second when the transaction data appears on the screen. The transaction data shall be formatted on the screen in such a manner that the viewer can easily correlate the vehicle on the screen with the Tolling Zone lane the system believes the vehicle traveled on.

The DVMS shall also provide images for use in determining vehicle class for those transactions whose vehicle classification may need human resolution. These transactions include ETC transactions where the transponder class and AVC class differ as well as for all video transactions.

Sufficient DVMS images shall be captured to assure that a usable image of the vehicle is obtained for vehicles traveling in the speed range of 0 to 90 mph. The system shall not be faulted for failure to obtain an image due to visual obstruction by other vehicles. However the camera height shall be chosen so as to minimize the probability of such obstruction to the degree practical.



The Camera used shall be of sufficient quality that adverse weather conditions, (snow, fog, direct sunlight, rain, etc.) do not cause degradation of the images provided by the camera.

The Tolling Zone system shall store the DVMS output (the combined video of the traffic in the Tolling Zone and the transaction data) locally. The DVMS output shall be in MPEG 2 format or other IP-compatible format so that it may be retrieved on any Commission network connected workstation. The DVMS storage capacity at the Tolling Zone shall be sized to store ninety (90) days worth of video and associated data for every Tolling Zone in MPEG-4 format of 4 frames per second (fps). Upon request from the Toll Host, the Tolling Zone system shall forward either near real time DVMS output or a requested time interval of previously recorded DVMS output to the requester where it can then be viewed or recorded for archiving purposes. The Contractor will have access to the DVMS video for use in system monitoring for maintenance and for the System Performance Verification required during system operations and maintenance phases (Phases III, IV and V).

V.7.6 MOTORIST FEEDBACK

Provision of vehicle implanted motorist feedback through the transponder is a possible feature that may be incorporated as part of the current IAG procurement for new ETC equipment. If this capability does result from the IAG procurement and if the Commission elects to provide this service to its customers, provision of this shall be negotiated between the Commission and the Contractor.

V.7.7 COMMUNICATION INTERFACE REQUIREMENTS

The system shall be interfaced over the PTC WAN connection to the Real Time Data Collector (RTDC) and or other servers at the Commission's central computer facility. Several kinds of data, including the following, will need to be exchanged between the Tolling Zone system and the RTDC. Below is an illustrative but not an exhaustive list:

- *E-ZPass* transponder status file;
- *E-ZPass* transaction data;
- Video transaction data;
- MOMS Messages (to the MOMS system) MOMS to reside at Proposer site ; and
- Streaming DVMS data on demand

The Tolling Zone Controller shall also communicate with the *E-ZPass* reader to obtain transponder reads.

The Contractor-provided Tolling Zone controller shall be designed to meet the required performance requirements while simultaneously communicating with the Commission RTDC via a router and communications link provided by the Commission. The I-80 ORT system will be required to communicate with the Toll Host. Message formats for data communication between Tolling Zone and the Central Computer Systems will be agreed between the Contractor, the Commission and the provider of the Commission's CSC/VPC/VIC systems.



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Because of the limited communication bandwidth different types of data transmission must be prioritized to ensure that the most time urgent data types are transmitted in the timeliest manner possible. The prioritization of the messages will be agreed between the Contractor and the Commission.

All toll zones shall be time-synchronized to a single time source (Network Time Protocol -NTP). Synchronization shall automatically occur at least once every four hours. All toll zones shall automatically and correctly adjust for daylight savings time.

V.8 PERFORMANCE REQUIREMENTS

The system shall be designed to support the performance requirements summarized below in **Table 4**. Proposers are asked to discuss in their proposals whether and how they would meet or exceed the stated requirements and how the system's ability to meet performance goals is to be demonstrated to the Commission.



Table 4 - System Performance Requirements

# Requirement Description		ORT Tolling Zones
VEHICLE DETECTION AND REPORTING		0 – 100 MPH
1.	Success rate for detecting vehicles passing through the Tolling Zone and producing a resulting vehicle-transaction record, expressed as a percent of the total number of vehicles passing through the Tolling Zone.	99.97 %
INCORRECT ASSOCIATION		0 – 100 MPH
2.	Expressed as a percentage of the overall number of vehicles that have either or combination of the following incorrect associations: A. Transponder incorrectly associated with vehicle B. Video image capture incorrectly associated with vehicle. C. Classification incorrectly associated with Vehicle.	<0.1%
ETC READ ACCURACY		0 – 100 MPH
3.	Transponder Read Success Rate, expressed as the percentage of vehicles carrying a properly mounted IAG-approved transponder and for which the vehicle’s passage beneath the gantry within the tolling zone produces a correct read and associates the read to the correct vehicle.	>99.99 %
4.	Reporting an ETC read of a transponder in a vehicle traveling in an adjacent un-tolled lane or in a vehicle in the opposing direction of travel.	<.1%
VIDEO IMAGE CAPTURE		0 – 100 MPH
5.	Failure to detect a video toll vehicle, expressed as a percentage of vehicles without a properly mounted, IAG-approved transponder that are not identified as a vehicle for which a video image is to be captured.	<0.2%



Table 4 - System Performance Requirements

#	Requirement Description	ORT Tolling Zones
6.	Incorrect Video Image Capture, expressed as a percentage of vehicles carrying a properly mounted, IAG-approved transponder but for which the vehicle's passage beneath the antenna results in the capture of a set of video toll images	<0.1%
7.	Failure to capture a readable plate image (where either the plate number or the state of issue is not discernable), expressed as the percentage of violating vehicles with an unobstructed plate ^{(3) (4)} for which a human-readable video plate image is not captured.	<0.2%
OCR		0 – 100 MPH
8.	Failure to obtain a correct OCR result of captured plate images that are unobstructed human readable images. ^{(4) (5)}	<10%
9.	Percentage of incorrectly reported OCR results. ^{(4) (5) (6)}	≤1%
AVC ACCURACY		5 – 100 MPH
10.	Correct Determination of Vehicle Class, expressed as the percentage of vehicles correctly classified and based on the Commission's classification scheme at that facility.	> 99.75%
11.	Avoid recording a single vehicle as two or more vehicles (as long as the vehicle presents a profile from overhead of at least six inches), expressed as a percentage of vehicle passages in a controlled test at a variety of natural light levels with the vehicle pulling a trailer with a narrow hitch (approximately 6 inches).	>99%
12.	Speed Accuracy Determination - expressed as the maximum deviation from true speed.	1 mph

- Note
- (1) The performance requirements apply in all lighting conditions and in all weather conditions except as noted below in Note 4.
 - (2) The specified performance levels apply for closely spaced groups of vehicles as well as for individual vehicles.
 - (3) A license plate shall be judged to be obstructed when one or more of the following conditions prevent the reading of the plate number:



- The vehicle either has no plate or the plate is not mounted in the legally required position;
 - The plate is covered by dirt or snow;
 - The plate is unreadable because of damage to the plate (such as the plate being bent or broken) or alteration of the plate by the addition of obscuring covers or sprays;
 - The license plate is blocked by an object carried by the violating vehicle (such as a plate frame, plate obscuring cover or spray, overhanging cargo or a trailer towing ball);
 - The license plate is blocked by something in the lane such as a person or another vehicle; or
 - Severe weather conditions such as heavy snow or dense fog block the plate's image.
- (4) Success rate for tractors pulling trailers is based on the front plate only.
- (5) OCR success shall be measured as follows:
- For plates issued by Pennsylvania, Ohio, New York, New Jersey, Michigan, Indiana, Illinois, Colorado, Connecticut, Wisconsin, Florida, Massachusetts, Oklahoma, Minnesota, Iowa, California, Missouri, and Nebraska the plate numbers and jurisdictions are correctly identified and reported.
 - For vehicles with license plates that are issued other jurisdictions and for motorcycle license plates issued by any jurisdiction the plate numbers shall be correctly identified and reported; plate jurisdictions for these listed jurisdictions need not be successfully determined but those that are reported shall be measured as incorrect in the percentage of incorrect OCR results; and
- (6) The OCR success-rate and failure rate calculations shall be judged on a single, presented result per Tolling-Zone passage for the vehicle.
- (7) The requirement regarding the percentage of incorrectly reported OCR results shall apply to all plate types of all jurisdictions.
- (8) Contractor shall establish criteria and testing methodology to substantiate achievement of the performance level listed in Table 1.

V.9 CAPACITY/SPEED REQUIREMENTS

The Tolling-Zone Systems shall be designed to support the transaction rates and volumes described in this Section.

Table 5, below presents the transaction processing load that the Tolling Zone equipment shall be designed and configured to support.



Table 5 - Tolling Zone Design Transaction-Processing Capacity/Speed Requirements			
TOLLING ZONE TYPE/TRANSACTION TYPE	TRANSACTIONS PER TOLLING ZONE		
	<u>PEAK</u>	<u>HOURLY</u>	<u>DAILY</u>
Two (2) Travel Lane Wide Tolling Zone Right 12 ft shoulder			
Toll Transactions	4 per second for 15 seconds	4,800	120,000
Video Image Capture	4 sets per second for 5 seconds	2,000	25,000

V.10 Uninterruptible Power Supply

Contractor shall provide the UPS and the equipment for filtering, conditioning, and distribution of line power to all Tolling Zone equipment designated as receiving uninterruptible power from the Uninterruptible Power Supply (UPS) as well as for equipment designated as tolerant of brief power interruptions. Contractor shall provide switching equipment and a UPS for each Tolling Zone. The Contractor shall provide appropriate switching equipment to ensure continued uninterrupted operation of designated toll collection equipment spanning an interruption of utility power until standby generators come on-line and thereafter.

When generators become operational and/or utility power returns, the UPS shall switch to charging operations while still protecting UPS-powered equipment and providing filtered power to this equipment. When utility power is restored, use of utility power shall resume automatically.

The standby generator shall be provided and installed by the Commission/Others.

Brief power interruption tolerant equipment need not be powered by the UPS. However, the switching equipment shall switch toll system equipment designated as brief power interruption tolerant directly from utility power to standby generator power during a utility power outage and return this equipment to utility power when utility power is restored.

The UPS shall be designed so as to provide full power to the UPS powered equipment for a minimum, fifteen (15) minutes and shall support operation of all UPS powered system equipment and keep the following functional capabilities fully operational during the power failure (satisfying all functional and performance requirements):

- Vehicle detection, ETC transponder read capability and transaction processing;
- Video image capture capability including supplemental lighting;
- Automatic Vehicle Classification (AVC) capability; and



- Communications within the Tolling Zone as well as communications to systems external to the Tolling Zone.
- Operation of the DVMS

The following equipment need not be powered by UPS:

- Any heating or cooling systems for toll equipment housings, including equipment designated as requiring uninterruptible power.
- Any supplemental lighting required by the DVMS.

The UPS shall be self-monitoring and shall provide operational status, fully charged, charging, depleted, and system failure messages to the MOMS system. UPS shall contain SNMP management cards and reports shall be sent to notify Key Personnel (TBD) of outages or faults. Complete diagnostic reporting of the power systems, UPS, and standby generators shall be available via the maintenance on-line monitoring function of the Contractor's system.

Note: Proposer is requested to provide the power requirements in the Proposal for the equipment to be UPS powered and for the brief power interruption tolerant equipment to aid the Commission in the calculation of standby generator sizing. If needed by the Proposer to specify equipment, the Commission will provide the power requirements of any equipment that is to be provided by Others upon request.

V.11 MAINTENANCE ON-LINE MANAGEMENT SYSTEM (MOMS)

The Contractor shall provide a Maintenance On-line Management System (MOMS) as part of the ORT System under this Contract. The MOMS shall allow for monitoring and control of equipment failures within the entire system as described in this RFP. The MOMS shall be the focal point for all system maintenance activities including routine preventative maintenance, corrective maintenance, real-time monitoring, repair calls and report generation.

The MOMS server shall reside at the Contractor's site; however the Commission shall be provided with query access to the MOMS data. The MOMS server shall be fully integrated with the Tolling Zone controllers in order to accurately receive system status information on a real-time basis. At a minimum, the MOMS shall be capable of providing the following information to its users:

- Current System Status;
- Tolling Zone Operation Status (Subsystem health for each Tolling Zone);
- Failure and/or Malfunction Location;
- Failure and/or Malfunction Description (w/ priority level);
- Spare Inventory Quantity;
- Part/Equipment description (including part/serial no.) (if applicable);
- Record of last maintenance activity for a part entered by maintenance staff;
- Record of last preventative and corrective maintenance activity for a part as entered by maintenance staff; and
- Historical system information/report generation.



The MOMS system dispatch the Contractor's maintenance force in accordance with the call-out and repair schedule provided in the Contractor's approved Maintenance Plan. The MOMS system shall also be capable of sending lane status and alert messages to PTC network control, in the Commission's current MOMS alert format.

V.11.1 FAILURE DETECTION AND REPORTING

An important purpose of the MOMS is to automate the issuing of repair/service calls to technicians. The MOMS shall be designed with the ability to generate work orders with little or no human intervention. Work order formats and specifications shall be determined during the design process and approved in writing by the Commission. The MOMS shall provide for generating, at a minimum, four (4) different types of work orders (Ad Hoc, Preventative Maintenance, Corrective Maintenance, and Emergency Maintenance). The work order shall also record the source of the work order, either as automatically triggered by MOMS monitoring, or the person reporting the failure (maintenance technician or Commission staff member), or both. The MOMS shall also provide for the capability to build ad-hoc work orders for unusual maintenance activity occurrences. In addition, a work order shall include, but not be limited to, the following information:

- Date/Time of Work Order Generation;
- Date/Time/Location of repair or maintenance call;
- Work Order Number (sequential); and
- Failure or Malfunction description.

The MOMS shall provide the capability to generate blank work orders for repairs or malfunctions not directly reported by the MOMS. The MOMS shall allow both automatic and manually activated paging of technicians once a work order has been generated.

The MOMS shall be designed to accommodate the assignment of priority levels for each failure message. The priority levels shall be those described in Table 9 - Maintenance Severity Levels. MOMS shall assign an initial priority level to each failure but shall provide for manual override by Contractor or Commission personnel to account for aspects that MOMS did not correctly assign an impact Severity Level. The paging process shall check to determine the assigned active technician and dispatch the new service call. MOMS shall monitor the disposition of service calls and shall generate a page to the maintenance manager for any work order not responded to or repaired within the required time.

V.11.1.1 System Monitoring

The MOMS shall report the status and performance of all levels of toll system equipment in near real-time. The performance monitoring shall be accessible from any workstation on the WAN provided the user has the proper access level rights. The performance monitoring function shall allow the user to select and observe the status and/or performance of several predefined portions of the toll collection system. The following is a breakdown of the various levels, and, at a minimum, the degree of information required to be displayed for each level:

- Tolling Zone Level Components;
- All equipment statuses;
 - Status of all Tolling Zone sub-systems and applications;



- Tolling Zone ID/Type;
- Tolling Zone Location;
- ORT System Level;
 - Status of Tolling Zone/ Communications Link.

The Tolling Zone controller shall be designed with a set of self diagnostics that continually monitor and report on the system health of the Tolling Zone controller and all the Tolling Zone subsystems and shall report the severity and nature of any failure. In addition to reporting failures indicated by equipment self checks, the MOMS capabilities shall include the cross checking of Tolling Zone subsystems' performance against one another by the Tolling Zone controller so that the duration of unnoticed toll operation system outages is minimized. An example of such cross checking would be illustrated by the repeated reading of E-ZPass transponders without concurrent vehicle detections. This condition might be interpreted as meaning the AVC system had failed.

The tolling-zone controller shall send messages to the Maintenance On-line Management System (MOMS) and existing Toll Host in Harrisburg (in its current formats) to record the failure/degraded condition and alert both Contractor maintenance personnel and PTC Network Control of the condition. The Tolling Zone controller shall flag each transaction that occurs when any component of AVI, AVC, or VIC is less than fully functional. Selected higher priority alerts shall also be e-mailed to a distribution list provided by the Commission.

V.11.2 MTBF & MTTR TRACKING

The MOMS shall be capable of tracking and calculating the Mean Time between Failure (MTBF) of the toll collection equipment. The calculations shall be performed automatically whenever the MTBF report is run. The MTBF shall take into account the number of installed pieces of equipment and the number of service calls on the equipment. Mean Time to Repair (MTTR) tracking shall also be performed automatically. It shall be recalculated every time a service call is closed on a particular equipment type for that equipment type.

V.11.3 REMOTE ACCESS NETWORKING

The MOMS shall be designed with the capability to allow technicians and/or other users to access the MOMS network from a remote location. Technicians or maintenance staff will typically utilize this function while on-site or to log-in and close out a work order.

Access shall be password-protected to prevent unauthorized users from gaining access to the MOMS. A single network password will not be acceptable for dial-up users. Each user shall use a personal password when logging into MOMS.

The remote access mechanism must be installed and maintained in accordance with current Commission IT security requirements. The Commission will provide the definition of these requirements to the Contractor just before or after NTP, at the mobilization meeting.

V.11.4 INVENTORY/SPARE PARTS CONTROL

The Contractor shall provide a rolling one year inventory of integrated spare units and spare parts as controlled by the inventory control function of the Proposers MOMS system. This function shall be integrated with the Work Order generation function, which will automatically



update and maintain the system and spare parts inventory based on Work Orders and technician recording of parts used during work order closeout.

V.12 HARDWARE GENERAL REQUIREMENTS

System Life - The system design goal shall be ten years minimum Service Life. Equipment shall be designed, fabricated, and tested to ensure that it operates satisfactorily without material degradation for a minimum of ten years. Expendable and consumable materials and supplies will not be included in this requirement.

New Equipment - All equipment, supplies, and materials for this system shall be new, unused, off-the-shelf, field proven items, of the latest model and technology when installed, modified only to the extent required to meet the overall special requirements of this specification.

Modular Design - Modular Design principles shall be used throughout the system, and shall be defined as the packaging of components together in replaceable units according to the function they perform and as using standardized hardware and components to achieve flexibility of use and to facilitate maintenance. Replaceable and repairable modules shall be used whenever possible to simplify troubleshooting, reduce downtime, and reduce operational and maintenance costs. Modules which perform identical functions shall be interchangeable. All modules shall be keyed or otherwise identified so that the correct module is easily distinguished and can only be properly inserted in its proper receptacle.

Uniform Design for All Tolling Zone Types - All Tolling Zones shall be designed, installed, connected, and documented in a uniform manner. Uniform components shall be designed and configured for all Tolling Zones to the greatest extent possible. Each Tolling Zone controller and other system components shall be configured identically to the extent possible, with the same boards in the same slots, the same hardware and software, the same data storage and the same connectivity.

Non-Proprietary - Wherever possible, components shall be readily available from multiple vendors. Every effort should be made in the design process to prevent reliance on a single vendor for any system components. When proprietary equipment is the only choice for a component the Contractor shall alert the Commission.

Interchangeability - All major assemblies such as subassemblies, modules, and parts which perform identical functions shall be electrically and mechanically interchangeable.

Accessibility - All assemblies, subassemblies, and modules shall be readily accessible for removal, testing or replacement without extensive removal of other modules or assemblies. Components shall be located so that there is visibility and access for the use of hand tools and standard test probes where maintenance is required.

Test Points - All Test Points necessary for maintenance while equipment is in operation shall be located and accessible on a test panel, or the individual module. Test Points shall be capable of accepting standard commercial test probes and leads. LED indicators shall be used to indicate presence or condition of various circuits and voltages where feasible. All test points and indicators shall be clearly marked to identify their function.

Electronic Components - All components shall be clearly marked with permanent identification.



Plugs, Connectors, and Terminal Blocks - All plug-in connectors shall be keyed or polarized to prevent mis-mating of connections. Where multiple plug-in connections occupy a small area, different style connectors shall be used for each function to prevent connecting to the incorrect circuits. All connectors shall be designed to prevent accidental loosening due to vibration or use, or be provided with locking devices to accomplish this goal. Strain relief shall be provided to protect the conductors at the point of joining the connector. Terminal Blocks and Connectors shall contain at least 20% spare connections. Terminal Blocks shall utilize screw-type terminations. All wire terminations shall be insulated and properly sized crimp-on insulated terminals of the proper size for the corresponding terminal block.

Wires and Cables (Copper and Fiber) - All Electrical Wires and Cables shall be installed point to point with no interruptions. All Wires and Cables shall be permanently marked or color coded for easy identification. All cables shall be labeled on each end. No wrap on or other temporary marking methods shall be used. There shall be no exposed wires or cables. All conductors shall be neatly enclosed in conduit, cabinets, cable trays or other protective enclosure approved by the Commission. All internal wires shall be color-coded or ribbon cable. Similar uses, such as data lines, control lines, specific voltages, grounds, etc. shall be color coded the same as far as practical. Universal color-codes and cable identifiers shall be utilized throughout the system. All communications cables, including computer wiring and fiber-optic cables, shall meet the latest requirements of the National Electrical Code (NEC) applicable at the time of this procurement. Multi-conductor cables shall be color coded in conformance to the applicable Color Code as published by the Insulated Cable Engineers Association (ICEA). All data and power cable in the field (i.e., not in a plaza, bridge or other NEMA 4 rated cabinets) shall be in conduit or flexible conduit, water-tight and dust-tight, including at all fittings.

Insulation - All Electrical Wires and Cables exiting an enclosure shall be properly insulated and protected to prevent wear and abrasion. Cable access holes shall be plugged and sealed to conform to the environmental requirements.

Circuit Protection - Components and devices which are susceptible to damage upon failure of the regulating element within a power supply shall be protected by means of an over-voltage protective circuit. All fuses shall be mounted with retention devices at both ends. All fuse types shall contain visual indicators to indicate a blown fuse. The Contractor's design and recommendations shall conform to the applicable lightning protection, surge, and transient protection standards, such as NFPA-78, IEEE Std 587, and UL-1447, as they apply to each area of protection.

Housings and Cabinets - The material and finish for new housings and cabinets shall be environmentally resistant to outdoor highway environments with wide temperature fluctuations and heavy use of salt. A minimum of ten (10) years service without additional painting or repairs is required. All cabinets and housings shall be fitted with required gaskets, grommets, and filters to prevent the entry of dust, dirt, smoke, moisture or other contaminants from entering the enclosures in accordance with the application in which the equipment is employed.

Hardware - All mounting hardware, bolts, nuts, studs, washers, brackets, screws, hinges, and others shall be new and shall be constructed of non-corrosive material, and of a design to perform their respective functions for the specified ten (10) year system life.



No Interference - Toll collection equipment, data cables and the system power distribution wiring shall operate without interference or degradation from electrical conditions found in a Tolling Zone environment. Equipment shall not be adversely affected by conditions including, but not be limited to, electrical interference from communications, RF radiation, all radios, vehicle ignition, treadle contacts, lighting fixtures, transients, booth heaters, ETC systems and electrical interference, direct sunlight, darkness, indirect sunlight, radiation heat loss, convective heat loss, wind, salt, all forms of precipitation, dust, smog, fungus, vehicle exhaust, and vibration.

Fabrication - All chassis, attachments, and hardware shall be fabricated from corrosion and rust resistant materials, or properly plated to achieve corrosion and rust resistance. For those housings and cabinets requiring locked covers, there shall be no exposed hardware visible or accessible from the outside. The covers shall fit flush with the main body of the housing with no exposed gaskets or seals visible when the cover is closed.

Stainless Steel Materials - The provision and fabrication of all stainless steel materials used in the system shall conform to current ASTM requirements. All welds shall be thoroughly cleaned to remove all oxide scale. Discoloration resulting from the welding process shall be removed from all external surfaces. All grinding, polishing and buffing shall be in accordance with the requirements of the material used.

Toll System Lock Requirements - All equipment and cabinet locks shall be removable and replaceable cylinder lock types. The Tolling Zone equipment shall be keyed alike. Each major area (maintenance, and data collection equipment areas) shall be keyed differently. If multiple compartments for each area must be accessed, they shall be keyed alike. The Contractor shall submit the keying index system for review and approval.

Applicable Codes - All work for this Contract shall be in conformity with the current requirements of the following:

- National Electric Code;
- National Electrical Contractors Association (NECA);
- Occupational Safety and Health Act (OSHA);
- National Fire Protection Association (NFPA);
- National Electrical Manufacturers Association (NEMA);
- Institute of Electrical and Electronic Engineers (IEEE);
- Applicable Electronic Industries Association (EIA) Standards for Interface and Intercommunication; and
- Underwriters Laboratories (UL).
- TIA 586 Telecommunications standards

Equipment Diagnostic and Self-Test Requirements - Diagnostic Firmware shall be imbedded in all Tolling Zone equipment to be interactive with operation and to self-test at the time the equipment is powered on and/or the Tolling Zone is restarted. Diagnostics shall operate automatically to detect malfunctions and failures and to report such failures to the MOMS system at the time of occurrence. Diagnostic Software shall be provided in the Tolling Zone controller to test and evaluate the operational condition of the entire system including communications. On-line diagnostics shall be capable of being monitored from any workstation



on the WAN. Diagnostics callable from a remote location shall provide appropriate output to that remote location.

V.12.1 LIFE, RELIABILITY, AND AVAILABILITY

The toll collection system, with appropriate maintenance, shall be sized and designed for a minimum ten-year usable life.

Each major part of the system shall meet or exceed specific Mean Time Between Failures and Mean Time To Repair criteria. Table 6, below, lists these requirements.

Table 6 - Equipment MTBF and MTTR

Equipment	Minimum Mean Time Between Failures	Maximum Mean Time To Repair
Tolling Zone Controllers ⁽¹⁾	30,000 hours	1 hour
ETC Reader/Antenna	N/A	1 hour
Automatic Vehicle Classification System (AVC)	15,000 hours	1 hour
Video Image Capture Subsystem (except supplemental illuminators)	20,000 hours	1 hour
Supplemental VIC Illuminators	10,000 hours	1 hour

Notes: (1) The redundant Tolling Zone controllers shall have an availability of 99.99%

MTTR is based on average repair times for typical system failures.

Proposers are asked to discuss in the proposal whether they can achieve or exceed these MTBF and MTTR requirements.

V.12.2 CAPACITY AND DATA RETENTION

In the event of a communications interruption the Tolling Zone system shall be capable of stand-alone operation. The system shall continue operating during the interruption and shall store all transaction data locally until communication with the Toll Host is restored. When communication is restored the Tolling Zone shall resume transmission of the transaction data; the data accumulated during the outage and thereafter the new transaction data.

In the event of extended communication outages the system design shall permit data, normally exchanged between the Tolling Zone and the Toll Host via PTC WAN to be exchanged via a high capacity media such as DVD. The process of reading and writing to the high capacity media shall not interfere in any way with transaction processing.

V.12.3 ELECTRICAL REQUIREMENTS

Electrical Power for all roadside elements of the open road toll collection system shall be supplied by the Commission. The Commission will (except where specifically stated to the contrary in the RFP) supply unfiltered 120V 60 Hz line power at each installation location. The Commission shall supply standby generator power for all ORT roadside equipment. The



Contractor shall also design and provide a single connection point to which the Commission shall connect the standby generator.

The Contractor shall provide equipment for filtering, conditioning, and distribution of line power to all Tolling Zone equipment. The Contractor shall provide Uninterruptible Power Supplies (UPS) and appropriate switching hardware to provide for continued uninterrupted operation of the Open Road Tolling system spanning an interruption of utility power until stand by generators come on-line or utility power is restored. UPS power shall be provided for the following equipment systems.

Open Road Toll Lanes:

- Tolling Zone controllers;
- AVC Subsystem
- ETC Sub-Systems;
- Video Image Capture Sub-System; and
- LAN, WAN, and all communications systems.

The UPS units shall supply sufficient power and time to allow safe, secure, regular shutdown of all system components, operations, and Tolling Zones such that no data is lost or altered due to the power failure. At a minimum, fifteen (15) minutes of UPS power shall be provided for the key Tolling Zone elements needed for maintenance and performance of the following subsystems:

- Vehicle Detection and Recording,
- ETC Reading,
- Video Image Capture, and
- Automatic Vehicle Classification.

When generator power comes on line or utility power is restored, the toll collection system shall transition to utility power automatically.

Complete diagnostic reporting of the power systems, UPS units, and backup generators shall be available via the maintenance monitoring function (MOMS) of the toll collection system. The UPS units shall be self monitoring and provide operational status signals such as: fully charged, charging, depleted, as well as system failure messages to the MOMS in order to support the diagnostic reporting. UPS units shall contain SNMP management cards and alerts should be sent to notify key personnel of outages or faults.

Others shall supply standby power generators to be used for standby power for all operations at the Tolling Zones in case of power failure.

V.12.4 ENVIRONMENTAL REQUIREMENTS

The toll collection equipment will be installed in one of two operating environments: exterior or in a building. The assembled equipment shall be rated to perform under those environmental conditions at the various sites.

The Contractor shall investigate the environmental factors that may affect the operation, reliability, and life of the system to be provided under this Contract and shall select equipment



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that is appropriate for operation in the environment or shall take adequate steps to protect the equipment from the environment.

For each environmental area the equipment installed or operated in that area the Contractor shall provide certified test results from a testing laboratory satisfactory to the Commission demonstrating that the equipment meets the environmental specifications indicated in Table 7.



Table 7 - Summary of Environmental Requirements

Area	Exterior	Building																		
Min operating Temp	-25°F	50°F																		
Max operating Temp	145°F	85°F																		
Min operating humidity	25%	25%																		
Max operating humidity	100% non condensing	99% non condensing																		
Shock	MIL-STD-810E Method 516.4 procedures IV – Bench handling and Package drop or 15G, 11ms saw-tooth, 6 axis.																			
Vibration	±1g from 15Hz through 500 Hz for a period of 15 minutes in three planes. Or the following: <table border="0"> <tr> <td>Frequency</td> <td>Displacement</td> </tr> <tr> <td>Below 1hz</td> <td>10 inch sway</td> </tr> <tr> <td>1-4 hz</td> <td>1inch sway</td> </tr> <tr> <td>4-10hz</td> <td>0.1 amplitude</td> </tr> <tr> <td>11-15hz</td> <td>.03 amplitude</td> </tr> <tr> <td>16-25hz</td> <td>.02 amplitude</td> </tr> <tr> <td>26-30hz</td> <td>.01 amplitude</td> </tr> <tr> <td>31-40hz</td> <td>.005 amplitude</td> </tr> <tr> <td>41-50hz</td> <td>.003 amplitude</td> </tr> </table>	Frequency	Displacement	Below 1hz	10 inch sway	1-4 hz	1inch sway	4-10hz	0.1 amplitude	11-15hz	.03 amplitude	16-25hz	.02 amplitude	26-30hz	.01 amplitude	31-40hz	.005 amplitude	41-50hz	.003 amplitude	None
Frequency	Displacement																			
Below 1hz	10 inch sway																			
1-4 hz	1inch sway																			
4-10hz	0.1 amplitude																			
11-15hz	.03 amplitude																			
16-25hz	.02 amplitude																			
26-30hz	.01 amplitude																			
31-40hz	.005 amplitude																			
41-50hz	.003 amplitude																			
Corrosion	IEC 68-2-11 or NEMA 4X enclosed	None																		
Electrostatic Discharge	Survives while booth testing	None																		
Rain	MIL-STD-810E Blowing rain method 506.3 procedure I or NEMA 4X enclosed	None																		
Dust	IEC-529/MIL STD-810 Sand and dust size smaller or equivalent to coal or salt or NEMA 4X enclosed	None																		

Where:

Exterior – On the gantry or at the roadside, but not in a building.

Building – Inside a finished building.

Certified results from prior testing by the manufacturer or an approved independent test lab may be used to satisfy the environmental qualification requirement.



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V.12.5 WEATHERPROOFING

Equipment installed in exterior locations shall be in housings that provide weather-proofing equivalent to that provided by NEMA 4X dust-tight and watertight enclosures.

V.12.6 LIGHTNING PROTECTION

The following specifications and standards of the latest issue form a part of this specification:

- Underwriters Laboratories, Inc., (UL) Installation Requirements for Lightning Protection Systems, UL 96A
- National Fire Protection Association, (NFPA) Standard for the Installation of Lightning Protection Systems, NFPA 780
- Underwriters Laboratories, Inc., Lightning Protection Components, UL 96
- TIA 586 Telecommunications standards



PART VI. SYSTEM DEVELOPMENT- PROJECT MANAGEMENT

The Commission shall require the Contractor to utilize sound integration software development processes. In their Technical Proposals, Proposers shall describe their integration software development process, including detailed examples of their process applied to projects of similar scope. The proposed conformance to a standard Systems Development Life Cycle Methodology (SDLC) should be indicated in the Proposal.

VI.1 PROJECT PHASES, SCHEDULES AND TESTING

This Project shall be divided into six overall activity phases, generally delineated by successful completion of major milestones. The Commission plan for scheduling the work under the project has the objective of synchronizing the civil work in the Tolling Zones with the Contractor's work. In order to meet the currently targeted milestones the project schedule must be an aggressive one that assumes both that the selected Proposer has previously developed a system capable of satisfying the essential requirements stated in this RFP and that the Proposer can marshal multiple teams to install and test the toll systems in the field.

All tolling zones on I-80 are planned to go on-line for the collection of tolls simultaneously. The currently planned opening date for tolled operation is the 3rd Quarter 2010.

The Project phases are as follows.

Phase I - Design, Manufacturing, Factory Acceptance Test - This phase includes the design, development, fabrication and pre-test of components of the entire toll collection equipment system up to and including successful performance of a full and detailed Factory Acceptance Test of the toll equipment in accordance with a pre-approved Test Plan and test scripts. This test shall be performed by the Contractor under the supervision of, and with the participation of the Commission;

Phase II - Installation Testing, Approval and Commissioning - Field equipment installation includes on-site Contractor field testing and debugging which shall be conducted for each Tolling Zone;

Phase III - Performance Evaluation - Performance evaluation period of ninety (90) days after all Tolling Zones are connected to the Toll Host, commissioned, and operational. This phase includes the provision of full system support and maintenance by the Contractor, culminating in Final System Approval for the Project Segment

Phase IV – Warranty – Operational/Preventive/Corrective Period 1 - Provision of full maintenance and system support by the Contractor during an Operations Period extending from the time of Final System Approval for a period of one (1) year. During this phase the Contractor shall continue to correct any outstanding problems; and

Phase V – Warranty - Operational Preventive/Corrective Period 2 - Provision of full maintenance and system support by the Contractor during an Operations Period extending from the time of expiration of phase IV for a period of ten (10) years. Phase V will be at the sole discretion of the Commission, during this phase the Contractor shall continue to provide maintenance of the Tolling Zone equipment and correct any problems that arise.



Phase VI – Warranty - Operational Preventive/Corrective Period 3 - Provision of full maintenance and system support for by the Contractor during an Operations Period extending for an additional Five (5)-year Optional Maintenance Period from the time of expiration of Phase V be at the sole discretion of the Commission, during this phase the Contractor shall continue to provide maintenance of the Tolling Zone equipment and correct any problems that arise.

Phase VII – Warranty - Operational Preventive/Corrective Period 4 - Provision of full maintenance and system support for by the Contractor during an Operations Period extending for an additional Five (5)-year Optional Maintenance Period from the time of expiration of Phase VI be at the sole discretion of the Commission, during this phase the Contractor shall continue to provide maintenance of the Tolling Zone equipment and correct any problems that arise.

VI.1.1 PHASE I – DESIGN, MANUFACTURING, FACTORY ACCEPTANCE TEST

Work during this phase shall include all system design, software development, hardware procurement and fabrication, shop testing, software testing, software documentation and other efforts culminating in a full Factory Acceptance Test. Periodically throughout this Phase, the Commission may visit the Contractor’s facility(s) in order to inspect work in progress and may request reasonable demonstrations of toll collection equipment and subsystems from time-to-time. The Commission will give reasonable advance notice prior to factory visits. The Contractor’s work during this phase also includes the following

- Development revision and review of the project schedule
- Preparation and submission of project plans
- Preparation and submission of design documents
- Preparation and submission of test scripts
- Factory Acceptance Testing

A kickoff or mobilization meeting between the Commission and the Contractor shall be held either at the end of negotiations just prior to, or within ten (10) business days after Notice to Proceed. At this meeting, appropriate lines of communication for both oral and written correspondence shall be established. Appropriate methods for documenting meetings, telephone conversations and other communications shall also be defined. The Contractor’s proposed Project Schedule developed using the Critical Path Method (CPM) will be reviewed at this time and refined as necessary.

Upon Notice to Proceed the Contractor shall immediately develop and submit a plan for civil works including drawings detailing required locations of Contractor provided equipment within or in the vicinity of the Tolling Zone. This plan for civil works must be consistent with and built on the tolling zone template submitted with the proposal

The Contractor shall develop design documents during the design process. Two formal design reviews shall be conducted; one for the review of a Detailed Requirements Specification (DRS) and one for the review of a System Design Document (SDD). Additional design review meetings may be scheduled as the Commission and the Contractor deem advisable.



The Contractor shall develop and submit a plan for commissioning the new open road toll collection system. The plan shall address the need to fully test the interface with the video account management system (provided by others) before commissioning the new system.

The Contractor shall provide test scripts for the review and approval of the Commission no later than 15 business days prior to the scheduled date of the Factory Acceptance Test.

At such time as the Contractor has submitted acceptable versions of the test documentation and completed all development and fabrication of the Tolling Zone test configuration, the Contractor shall provide written notice to the Commission requesting the scheduling of the Factory Acceptance Test.

The Factory Acceptance Test shall involve testing of all subsystems to be installed as part of the Open Road Tolling System.

All components shall be fully fabricated and integrated, in a form ready for installation at the time of the Factory Acceptance Test.

Any toll system functions defined in this Contract as well as in any Contract amendments shall be subject to detailed testing and verification by the Commission, during the Factory Acceptance Test. If, in the judgment of the Commission, the Factory Acceptance Test indicates that the toll collection equipment and software appear to be functioning satisfactorily, in accordance with a pre-defined test plan, all functional and technical requirements of the Contract and approved by the Commission, the Commission shall issue written approval of the Factory Acceptance Test.

This approval of the Factory Acceptance Test shall in no way reduce or eliminate the Contractor's full responsibility to resolve any problems and make the toll collection system work in full conformance with the requirements of this Contract. Nor shall it limit the rights of the Commission to bring toll system problems to the attention of the Contractor at a later time.

VI.1.2 PHASE II – INSTALLATION TESTING, APPROVAL AND COMMISSIONING

This Phase includes installation, testing, testing approval, and Commissioning. The Commission/Others shall provide and/or install items as described in Table 1. Concurrently with the issuance of Factory Acceptance Test approval by the Commission or prior thereto at the Contractor's sole risk, the Contractor may commence shipment of the toll collection equipment to the site and begin the installation phase at any Tolling Zones that are in condition to do so.

During installation work in Phase II of the project, the Contractor shall provide a Resident Project Manager conveniently located and accessible to the Commission from a local office. The Tolling Zones are to be located on an existing traffic-carrying roadway and therefore toll system equipment and testing will need to be coordinated between the Contractor and the Commission. The Contractor's Resident Project Manager shall cooperate and coordinate with the roadway construction contractor(s) and applicable governmental entities on traffic issues and the scheduling of work during construction. The Resident Project Manager shall inform the Commission's project manager of progress through bi-weekly written status reports whenever



installation and/or testing activities are underway and shall provide immediate written notification of difficulties encountered.

In the event that any Tolling Zone structure is damaged due to the Contractor's activities, such damage shall be repaired immediately at the Contractor's expense and to the satisfaction of the Commission.

The Contractor, at his own expense, shall maintain the work area and all places of his occupation clear of all refuse and rubbish that may have accumulated due to his operation.

Each Tolling Zone will be granted Field System Approval when that Tolling Zone has passed the approved Field Test showing it to be tested, complete, and operational. When all the Tolling Zone systems have been granted Field System Approval and the MOMS system is tested complete and operational and integrated with all the Tolling Zone systems, MOMS shall be granted Field System Approval. No element of the System shall enter Revenue Service unless the MOMS is then capable of monitoring performance of that element or a Waiver of this requirement is obtained from the Commission.

The Commission's present plan is to commission all Tolling Zones simultaneously. Approximately twenty business days prior to the scheduled commissioning of the toll system and the activation of toll operations the Commission will advise the Contractor of the actual commissioning date. The Contractor shall then inspect the Tolling Zones and the MOMS and provide a letter to the Commission certifying the operational readiness of the entire system. The Commission reserves the right to use the system for tolling even if limited system defects still exist, which may delay Field System Approval or Phase II approval. In the case where the system operates with known defects in the toll system, the granting on Phase II Approval and the commencement of Phase III will be the date that the defects are corrected rather than the date tolled operation begins. The conclusion of Phase II shall be signified by the granting of Field System Approval to the MOMS system and to all the Tolling Zones.

If Phase II Approval cannot be granted due to remaining problems, the delay in the Commissioning Date shall be due to Contractor delays and the Commission will be entitled to Liquidated Damages from the Contractor as set forth in this RFP. Phase II will be conducted in coordination with roadway construction and tolling initiation schedules.

The Contractor shall fully support and maintain all installed portions of the ORT system from the time it is brought on-line in Phase II until the conclusion of whatever is the last Maintenance Period of the Contract.

VI.1.3 PHASE III – PERFORMANCE EVALUATION

Phase III testing, an Operations and Maintainability Test, shall be conducted beginning with the granting of Phase II Approval for the system.



Phase III will consist of a ninety (90) day period of observation and evaluation of the new Open Road Tolling System including the MOMS under actual use. Any functional or performance problems detected during the monitoring of the toll system during the Phase III test and observation period shall be brought to the attention of the Contractor for resolution. At the conclusion of the evaluation period, if the system is considered to be operating fully in compliance with Contract requirements, the Commission shall provide the Contractor with written notice of Final System Approval.

Conditions for granting Phase III Approval shall include confirmation that the equipment is meeting the Reliability and Maintainability requirements (see Section V.12.1) and that a period of at least 30 continuous days of operation within the overall 90 days was without experiencing a major equipment failure or functional/performance problem.

VI.1.4 PHASE IV – WARRANTY – OPERATIONAL/PREVENTIVE/CORRECTIVE PERIOD 1

Phase IV involves continued toll system maintenance for the one year period after the conclusion of Phase III. This period commences with the granting of Final System Approval. During this period the Contractor shall provide maintenance services as described in this RFP and supply adequate maintenance personnel, spare parts, and factory support to ensure the system shall remain fully operational in full accordance with system performance requirements and problems are promptly corrected.

VI.1.5 PHASE V – WARRANTY – OPERATIONAL/PREVENTIVE/CORRECTIVE PERIOD 2

This Phase of the Contract, Phase V, includes continued toll system maintenance for up to ten (10) years of a Maintenance Period. This period commences with the granting of Final System Approval for the Project Segment. During this period the Contractor shall provide maintenance services as described in this RFP and supply adequate maintenance personnel, spare parts, and factory support to ensure the system shall remain fully operational in full accordance with system performance requirements and problems are promptly corrected. The Contractor shall also perform periodic system audits as derived from the System maintenance manuals during this Phase. The Commission may request to review the results of the periodic audits as it deems necessary.

VI.1.6 PHASE VI – WARRANTY – OPERATIONAL/PREVENTIVE/CORRECTIVE PERIOD 3

Phase VI consists of an optional five (5) year period of the project. Phase VI is an extension of Phase V which extension is at the sole determination of the Commission. At the conclusion of Phase VI the Contractor shall provide an optional maintenance training class to the Commission or its designee and shall turn over the complete set its maintenance tools and spare parts. The spares complement turned over shall be sufficient to maintain the system for a one year period.



VI.1.7 PHASE VII – WARRANTY – OPERATIONAL/PREVENTIVE/CORRECTIVE PERIOD 4

Phase VII consists of an optional five (5) year period of the project. Phase VII is an extension of Phase VI which extension is at the sole determination of the Commission. At the conclusion of Phase VII the Contractor shall provide an optional maintenance training class to the Commission or its designee and shall turn over the complete set its maintenance tools and spare parts. The spares complement turned over shall be sufficient to maintain the system for a one year period.

VI.2 WORK PROGRESS

On a monthly basis the Contractor shall update and meet with Commission staff to review progress and the submitted updated project schedule. The Contractor shall prepare and submit to the Commission monthly progress reports on the status of all major items and activities. The monthly progress report shall include a summary of the activities conducted and milestones achieved in the prior month as well as those planned for the subsequent month. The report shall include an updated version of the Contractor's CPM project schedule reflecting the current state of the project. The monthly report shall be submitted a minimum of 3 business days prior to the scheduled meeting date.

Project progress meetings shall be conducted monthly at the offices of the Commission, at a schedule to be proposed by the Contractor and approved by the Commission. The purpose of these meetings will be to monitor progress, discuss design issues and plan for system installation, test and start up of operations.

VI.3 MILESTONE SCHEDULE

The specific milestones and submittals, which include the Commission's required milestone dates for the project, are set forth in Table 8 - Milestone & Submittal Schedule, below. The Contractor's CPM Project Schedule shall include but shall not be limited to the milestones and submittal dates shown in Table 8. The schedule shall be used as a basis for progress tracking throughout the course of work.

The Proposer shall submit a proposed milestone and submittal schedule table in the Technical section indicating what is proposed as milestone and submittal timing.



Table 8 - Milestone & Submittal Schedule

MILESTONE/SUBMITTAL	TARGET DATE (1)
Mobilization Meeting	Just prior to or after Notice to Proceed
Notice to Proceed (anticipated)	12/17/08
Configuration Management Plan	(1)
Quality Assurance Plan	1/16/09
Detailed Requirements Specification (DRS) Review	(1)
System Design Document (SDD) Review	(1)
Test Plan	(1)
Environmental Certifications	(1)
Factory Acceptance Test Scripts	(1)
Field Test Scripts	(1)
Reliability & Maintainability Test Plan	(1)
Installation Plan	(1)
Communications Plan	(1)
Maintenance Plan	(1)
Maintenance and Service Manual	(1)
Parts List	(1)
Wiring Diagrams	(1)
Factory Acceptance Test Phase I Complete	6/16/09
Gantry delivery to all Sites	7/29/09
Begin Installation/Testing at Eastern Site 1	9/14/09
Installation/Field Testing completed at Eastern Site 1	3/19/10
Begin Installation/Testing at Central Site 1	9/21/09
Installation/ Field Testing completed at Central Site 1	3/26/10
Begin Installation/ Testing at Western Site 1	9/28/09
Installation/Testing completed at Western Site 1	4/2/10
Begin Installation/ Field Testing at Eastern Site 2	3/1/10
Installation/Testing completed at Eastern Site 2	6/11/10
Begin Installation/ Testing at Central Site 2	3/1/10
Installation/ Field Testing completed at Central Site 2	6/25/10
Begin Installation/ Testing at Western Site 2	3/1/10
Installation/ Field Testing completed at Western Site 2	7/16/10
Begin Installation/ Testing at Eastern Site 3	3/1/10
Installation/ Field Testing completed at Eastern Site 3	6/18/10



Table 8 - Milestone & Submittal Schedule

MILESTONE/SUBMITTAL	TARGET DATE (1)
Begin Installation/ Testing at Central Site 3	3/1/10
Installation/ Field Testing completed at Central Site 3	7/2/10
Begin Installation/ Testing at Western Site 3	3/1/10
Installation/ Field Testing completed at Western Site 3	7/23/10
All sites available for Commissioning	7/26/10
Operational Test Successfully Concluded- Final System Approval/Phase III Approval	90 calendar days after System Commissioning
Warranty Period (Phase IV) begins	At Phase III Approval
Maintenance and Service Manual	Within 90 days following Phase III Approval
Software Source Code and Associated Documentation (in escrow)	Within 90 days following Phase III Approval
Final As-Built Drawings	Within 90 days following Phase III Approval
Base Maintenance Period (Phase V) Begins	1 year after Final System Approval
Optional Maintenance Periods (Phase VI at Commission's sole option)	After Phase V ends
Optional Maintenance Periods (Phase VII at Commission's sole option)	After Phase VI ends

Note: (1) The Contractor is free to schedule these dates as long as the named milestone dates are not endangered or compromised.

It is anticipated that the sites will be grouped geographically as shown. However, the Commission reserves the right to modify the specific site groupings and site designations within the groupings. No more than 3 sites will require installation completion in 2009.

VI.4 PLAN AND DOCUMENTATION REQUIREMENTS

All Plans and Documentation shall be submitted in the English language.

All Plans and Documentation shall be submitted to the Commission for its review and approval. Plans and Documentation shall be submitted in sufficient time for a minimum of two submission iterations of Commission review/Contractor revision to be completed and still adhere to the targeted final delivery requirements presented in Table 8. The Contractor shall conduct a meeting to present each document to the Commission. Unless specified otherwise herein, the document shall be delivered to the Commission no less than 3 business days prior to the meeting date. Following the presentation meeting, the Commission will endeavor to expeditiously review submitted documents and respond with comments or an approval but the Contractor should plan for a minimum Commission review time of ten (10) business days. Unless major defects in the document need to be corrected, presentation meetings will not be required for document revisions. Multiple simultaneous or overlapping submittals may extend the Commission's review times. If corrections or improvements are requested, the Contractor shall resubmit the



Plans and Documentation until fully acceptable. Need for document re-submittal shall not be a cause for delay in completing the project in accordance with the schedule requirements.

Approval of documents shall not relieve or limit the Contractor's responsibility to provide equipment in full compliance with the Contract. Deviations from the RFP requirements that may be contained within Contractor submitted documents, even though the document may be approved by the Commission, shall not have the effect of modifying Contract requirements. Only specific requests to the Commission from the Contractor for waivers or specification change that are formally approved by the Commission shall void or change requirements in the Contract.

When possible, documents shall be formatted for/printed on letter size sheets. Hard copies of documentation shall be bound in loose-leaf binders with the name of the manual printed on the face and spine of each binder. Tab indexes shall be provided for each major section of the documentation. All index tabs shall be a permanent part of a durable index sheet.

The Contractor shall utilize an access-controlled website provided by the Commission to submit and store the various documentation submittals. The Commission currently uses Adobe's Buzzsaw product to provide this functionality.

Documents submitted shall be in PDF or Microsoft Word format. All drawings submitted by the Contractor for approval shall be submitted in AutoCAD DWG format. Final Submittals shall be in hardcopy, Adobe PDF files and native files of the application in which the Contractor developed the drawings.

During the Warranty and Maintenance period the Contractor shall update all documentation to reflect correction of discovered errors or enhancements made to the system. The Contractor shall provide updated versions to selected documents within 6 weeks of any updates or revisions in Adobe PDF and AutoCAD DWG files of the application in which the Contractor developed the document/drawings.

During the course of the Project any implemented changes shall be reflected in the construction drawings within sixty calendar days of the completion of the change implementation.

VI.5 PROJECT MANAGEMENT PLAN

A detailed Project Management Plan shall be submitted to the Commission.

The plan shall include a detailed description of the management technique to be used during all phases of the project.

Specific areas of project control to be identified shall include, but are not limited to, the following:

- Approach to the Work
- Communication with the Commission;
- Primary Project Responsibility;
- Design and Development of System Architecture and Software;



- General Contractor Coordination;
- Progress Scheduling (CPM based);
- Progress Reporting and Coordination with the Commission;
- Quality Program;
- Configuration/Change Control
- Testing;
- Design and Design Reviews;
- On Site Installation;
- Record Keeping;
- Sub-Contractor Management and Coordination(if any);
- Work Breakdown Structure; and
- CPM based project schedule.

VI.6 CONFIGURATION MANAGEMENT PLAN

The Contractor shall develop and provide a Configuration Management Plan for the review and approval by the Commission to be adhered to throughout the duration of this project.

A method of configuration management shall be utilized in order to efficiently and accurately track and monitor the progress and changes that occur in all areas of this project.

At a minimum the Configuration Management Plan shall address the following areas:

- Configuration Control
 - Requirements Management
 - Deviation and specification change requests
 - Data Management
 - Configuration Audits
 - Functional
 - Physical
 - Approval Requirements for Installed Systems
 - Testing Requirements for installed systems
- Configuration Status Accounting
 - Document Control And the Library Function
 - Approved Documents
 - Revision History for Documents
 - Physical Item Content
 - Physical Item Where Used
 - Status of Changes
 - Changes by Product/Serial Number
 - Results of Configuration Audits
 - Configuration Management Accounting (As Designed, As Built, As Delivered)
 - Modification Status of Installed Systems



VI.7 QUALITY ASSURANCE PLAN

The Contractor shall submit a Quality Assurance Plan, including procedures, processes and material. The plan shall include a listing of each task and a reference of procedures with summary descriptions to assure that all Work affecting quality (including engineering, programming, purchasing, handling, machining, assembling, processing, inspecting, testing, modifying, installing and any other treatment of product, facilities, standards, or equipment) shall be prescribed in a clear and complete document.

The plan shall ensure that the Contractor has established and will maintain an effective Quality Assurance Program. The Quality Assurance Program shall include, but not be limited to, the following:

- Assure quality throughout all areas of Contract performance;
- Assure that all requirements of this Contract are validated through all stages of this project; and
- Identify and eliminate items that cannot meet approved standards and specifications.

The Contractor shall be responsible for assuring that all supplies, components, systems, subsystems and services procured from subcontractors and vendors conform to the Contract requirements. The Quality Assurance requirements for the Contractor shall apply to the work of all subcontractors.

The Plan shall document the design, component selection, inspection, fabrication and testing, procedures and standards that shall ensure the system satisfies the Reliability and Maintainability requirements. It shall also address the quality standards for the Warranty and Maintenance phases.

VI.8 DESIGN REVIEWS/DESIGN REVIEW DOCUMENTATION

The Contractor shall conduct two formal design reviews during Phase I as follows:

1. Detailed Requirements Specification Review (DRSR)
2. System Design Document Review (SDDR)

Each of the reviews may be broken into multiple sessions and may be followed by subsequent additional sessions in the event material could not be covered or issues could not be settled in the allotted time. The agenda for the review and documents that are scheduled for examination at the reviews shall be delivered to the Commission at least five (5) business days prior to the beginning of the first session of the review.

The System Design Review will begin with a one to two day design executive overview that will be attended by the Commission. The detailed review will continue thereafter with the Commission project team in attendance.

Additional design review meetings may be held during the development process as the Commission and the Contractor deem necessary.

VI.8.1 DETAILED REQUIREMENTS SPECIFICATION (DRS) REVIEW

The Contractor shall prepare a Requirements Traceability Matrix – a matrix of system rules and requirements to be incorporated in and tested for the I-80 toll implementation. These rules and requirements shall be extracted and expanded from this RFP and the Proposal. The format of the DRS shall provide a column in the matrix to indicate if, when and how the requirement is to be verified, whether by inspection, analysis or test.

The Contractor will conduct a walk-through for the Commission requirements for review, clarification, and to support the development of the Detailed Requirements Specification (DRS). Because the requirements may evolve over the course of the Project, the Contractor shall update the DRS as needed and shall use a versioning and configuration control process to maintain the document. Updated versions of the Requirements Traceability Matrix shall be submitted in redline where it would be helpful in distinguishing matrix elements that have changed from those that have not.

VI.8.2 SYSTEM DESIGN DOCUMENT (SDD) REVIEW

The Contractor shall provide functional narrative text, system and subsystem block diagrams, data flow diagrams, data structure diagrams, schematics and other graphic illustrations to demonstrate the technical adequacy of the system design approach and compliance for system hardware and software with quality assurance, reliability, maintainability, software development, and other requirements of these specifications.

The System Design Document (SDD) shall be reviewed at the System Design Review. It shall include such detail as block diagrams, screen layouts, report formats, software design, testing procedures, operational procedures, etc. A list of equipment for each function along with a description of its role shall be provided.

This System Design Document shall be an extension of this RFP, the Proposal and the DRS. It shall include such detail as block diagrams, screen layouts, report formats, software design, testing procedures, operational procedures, etc. A list of equipment for each function and a description of its role shall be provided.

The topics to be discussed in the SDD shall include at least but are not limited to the following:

- Scope of Project
- Compliance Review Matrix
- System architecture.
- Interaction with other contractors
- Work Breakdown Structure
- Master Schedule (in summary or by reference)
- Tolling Zone Design
 - Functionality
 - Hardware, Specifications and Integration
 - Bill of materials.
- AVC Subsystem



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- VIC Subsystem
- Digital Video Monitoring System
- Communications
- Maintenance Functionality
 - MOMS Messages
 - Maintenance Service and User Interface

- Hardware, Specifications and Integration
 - Communications
 - Maintenance Functionality
 - MOMS

- Software / Database Design
 - OS
 - Relational Database and Relationships
 - Programming Language
 - Version Management

- Performance Standards
 - Capacities
 - Degraded Modes of Operations
 - Speed
 - MTBF and MTTR
 - Environmental Requirements and Specifications
 - Communications

- Environmental Certifications/Testing Results

The SDD shall be updated throughout the Project as design details emerge and mature. The Contractor shall use a versioning and configuration control process to maintain the document. Upon completion of the system, the Contractor shall deliver updated SDD that reflects the “as-built” system.

VI.9 TESTING/TEST PLANS

VI.9.1 TEST PLAN

The Contractor shall prepare a detailed plan for testing all components specified and required under this RFP. This plan shall include environmental certification/testing, functional tests and other tests culminating in the performance of the Factory Acceptance Test, Field Tests, and Final Acceptance Testing. The Contractor shall submit a written report describing and detailing results for all tests performed.

The Commission shall be permitted to participate in or otherwise observe any and all of these tests. The Contractor shall include tentative dates for conducting the various tests in the test plan. During the course of the work reasonable modifications to these dates may be permitted by the



Commission provided a written request for such changes is made at least two (2) weeks prior to the revised test date.

With the Test Plan the Contractor shall submit an undated version of the Requirements Traceability Matrix listing each system requirement and how that requirement is to be tested or demonstrated, by inspection, analysis or test. For those requirements that are to be verified through testing, the matrix shall provide the test phases (environmental testing, FAT, Field Testing Operations and Maintainability Testing, etc.) during which the requirement will be verified and a general description of the approach to the test.

All costs associated with testing including the provision of test vehicles and test vehicle drivers shall be deemed to be included in the Contractor's bid price.

Testing shall verify functional and performance requirements for the Tolling Zone System and MOMS.

VI.9.2 ENVIRONMENTAL CERTIFICATION/TESTING

The Contractor shall provide test results, certified by a testing laboratory approved by the Commission, confirming the suitability for all proposed system elements that are to be installed at the roadside or on the gantry confirming the equipment's suitability for those environments. If certified test results are not available or the results are not satisfactory the Contractor shall arrange for such tests to be conducted at no additional cost to the Commission. The Contractor shall provide the Commission with certified test results for all equipment that is to be installed in the Tolling Zone. The manufacturers' catalog cut sheets showing environmental operating requirements will be acceptable certification.

VI.9.3 FACTORY ACCEPTANCE TEST SCRIPTS

The Contractor shall prepare detailed test scripts for the Factory Acceptance Testing. The Scripts shall provide for the demonstration that the system satisfies all the requirements listed in the Test Plan's Matrix of Requirements - those that are to be demonstrated by inspection, by analysis and by test. The Test Scripts shall cover test set-up, step by step procedures and expected results. For each test step the test scripts will provide space beside the expected results for that step for the actual results to be noted.

With the Test Scripts the Contractor is to verify that the requirements specified herein have been satisfied by the implemented system. The following list is not intended to be exhaustive but rather indicative and suggestive of the aspects of the system that are to be demonstrated in the tests:

- **Power up tests**
- **Verify initialization**
- **Verify data integrity (no loss of data)**
- **Verify diagnostic messages**
- **Introduce failures**
- **Verify diagnostic messages**
- **Normal Transaction Tests**



- **Tolling Zone operational tests**
- **Vehicle Detection and Separation Test** - Verify the transaction generation and processing requirements that are common to all transactions under all vehicle mixes (e.g., trucks followed by vans or passenger vehicles, trucks followed by buses, etc.) in free flow and simulated 'Stop and Go' conditions.
- **ETC Transactions** - Verify the transaction generation and processing requirements that are common to all ETC transactions and the contents of those ETC transactions using controlled vehicles (a mix of passenger vehicles and vans, pickup trucks, vehicles pulling trailers, and at least one large tractor/trailer rig, some test vehicles equipped with single, properly mounted transponders and some vehicles not equipped with transponders) executing scripted test scenarios.
- **Video Transactions** - Verify the transaction generation and processing requirements that are common to all video transactions using controlled vehicles (a mix of motorcycles, passenger vehicles and vans, pickup trucks, vehicles pulling trailers, etc.)
- **Vehicle Classification Test** - Verify the transaction generation and processing requirements that are common to classification of vehicles as specified by the Commission during the Requirements Phase of the project. The classification test will use as mix of passenger vehicles and vans, pickup trucks, vehicles pulling trailers, etc....
- **Video Image Capture/OCR** - Verify that images captured by the system can be read by the supplied OCR technology at the performance rates defined in Table 4 - System Performance Requirements.
- **Video Image Capture/Manually Readable Plates** – Verify that the system will capture manually readable license plate images at the performance levels defined in Table 4 - System Performance Requirements.
- **Peak Hour Processing of ETC Transactions** - Verify requirements related to ETC transaction processing speed.
- **Varying light conditions**
- **Various speeds**
- **Correct identification of violators within a platoon of vehicles**
- **Proper association of vehicle and transponder**
- **Tolling Zone stand-alone operation**
- **MOMS Functional Test** demonstrating the ability of the System elements to detect failure or degraded performance and the MOMS' ability to report it and manage the rectification of the problem.
- **Digital Video Monitoring System**

The Factory Acceptance Test Scripts shall include conditions and scenarios that verify functionality and performance for all elements of the System in both normal operational modes and various degraded modes of operation.

Conditions and scenarios of the Factory Test Scripts shall include items such as lighting, type of vehicle, and the speed and movement of the vehicles through the Tolling Zone in the travel lanes and on the shoulders (left to right, straddling lanes, vehicle speed, and mix of vehicles with and



without transponders). The testing shall include correlation testing where platoons of closely spaced vehicles, some with and some without transponders passes under the gantry and the system correctly identifies and captures images of the video toll payers/violators. This identification of video toll payers/violators shall be accomplished without recourse to the use of license plate numbers of the test vehicles.

VI.9.4 FACTORY ACCEPTANCE TEST

The Contractor shall prepare schedule, and conduct a full Factory Acceptance Test for the Commission. The processing of video and ETC transactions shall be demonstrated. If the Factory Acceptance Test indicates that the system and its components are satisfactory, the Commission will issue written approval of the Factory Acceptance Test, indicating satisfactory completion and approval of Phase I. If the results are not satisfactory the Contractor shall request the scheduling of a test re-run to occur after corrective action is completed.

Components used in the Factory Acceptance Test shall be production models, which would otherwise be suitable for installation at Tolling Zones. The contractor's internal testing and evaluation shall be completed prior to the Factory Acceptance Test.

The Factory Acceptance Test is the culmination of the design, development, fabrication and pre-test of components. This test shall be performed by the Contractor at a site provided by the Contractor under the supervision of, and with the participation of, the Commission.

During the Acceptance Test, the Commission or its designee will record the actual test steps on a copy of the test scripts. At the conclusion of the test the recorder of the test step outcomes will sign the marked up document; the Contractor will be given the original and the Commission will retain a copy. Subsequently, the Contractor shall prepare a factory acceptance test report and submit it to the Commission for review and approval.

If there are any failures or anomalies in conducting any test step, the Contractor shall take the necessary corrective action and the test shall be repeated. In the case that corrective action is undertaken the Contractor shall perform any necessary regression testing to ensure that such corrective action has not adversely affected the system's ability to pass previously conducted test steps. If necessary, this process shall continue until success is achieved.

VI.9.5 FIELD TESTS/ FIELD TEST SCRIPTS

The Contractor shall prepare detailed test scripts for the Field Tests. The Scripts shall be designed to verify the installation and confirm that the Tolling Zone equipment is ready for toll collection operation.

The tests to be performed shall be defined in the Contractor's test plan and test scripts. The Commission reserves the right to alter these test scripts at any time to verify system functionality meets all requirements necessary to deem the system functional.



As the Contractor completes equipment installation, additional testing shall be performed to verify that the functionality demonstrated during the Factory Acceptance Test is not adversely affected when the system is facing real world conditions.

The tests to be performed as field verification tests shall be similar to the tests in the Factory Acceptance Test and shall be conducted under the supervision of, and with the participation of the Commission in accordance with the test plan and test scripts previously approved by the Commission.

VI.9.6 RELIABILITY AND MAINTAINABILITY TESTING

The Contractor shall develop and submit to the Commission for review and approval a Reliability and Maintainability Test Plan that defines the goals, methods, techniques, discipline and data recording methods for determining parameters such as Mean Time To Failure (MTTF) and Mean Time To Repair (MTTR), or measures of the reliability and maintainability of the operational system. The Plan shall also describe the format and proposed content of the report that the Contractor shall submit at the end of the Reliability and Maintainability Test for each Project Phase. Successive reports shall present cumulative data for the current and earlier Project Phases.

The Contractor shall conduct on-line demonstration tests of the reliability and maintainability of the System under actual operational conditions. The on-line demonstration test shall include both hardware and software for the Tolling Zone systems.

The demonstration shall concentrate on demonstrating the complete set of functions and requirements set down in these Specifications while also providing required the reliability and maintainability.

The Contractor shall provide written test procedures to conduct and evaluate the test. The written test procedures shall be submitted for the Commission for review and approval not fewer than 60 calendar days prior to the first Tolling Zone Commissioning date.

The demonstration test for the Tolling Zone systems shall start on the date of commissioning of the each Project Phase and run until the end of Phase III (Final System Approval) for that Project Phase.

The objective of the demonstration test shall be to measure the System's compliance with reliability and maintainability specifications related to Mean Time to Failure, "response time" and Mean Time to Repair when the system experiences a relevant chargeable failure.

The Contractor shall maintain an accurate record of all hardware and software failures via the MOMS during the demonstration tests. If the observed system MTBF, response or MTTR times exceed the allowable Contract values during the demonstration test, the Commission may, at its sole discretion, require the initial test period to be extended until the system meets the approved maintainability values. The Contractor shall take all necessary and prudent actions required to bring all response or repair times into contract compliance.



With the Reliability and Maintainability Test Plan the Contractor shall submit an undated version of the Requirements Traceability Matrix listing each system requirement, the design document statement(s) to satisfy it to and the Reliability and Maintainability Test Plan element that will verify the requirement is fulfilled by the system, whether it is by inspection or test, for those requirements not previously verified.

VI.10 INSTALLATION/INSTALLATION PLAN

All installation shall be completed in accordance with the Commission approved Installation Plan.

A detailed Installation Plan shall be submitted by the Contractor. The Installation Plan shall include, but not necessarily be limited to the following:

- Installation management procedures;
- Control of the work and record keeping;
- Subcontractor activities;
- Activities by worksite;
 - Preliminary site work;
 - Final installation and conversion;
- Subsystem and component installation sequence; and
- Commissioning Sequence and Process.

The Installation Plan shall be developed with the understanding that the schedule will necessitate that the Contractor will have to deploy multiple installation work crews. Also the Contractor may need to schedule the work without having exclusive or uninterrupted access to the work site. During installation and Field Testing the Contractor shall have a full time Installation Manager on-site to coordinate the Contractor's activities. The Contractor's Installation Manager shall cooperate with roadway construction contractor(s) and the Commission's and PENNDOT maintenance forces as discussed in Section VI.1.2.

Approximately sixty (60) calendar days prior to the scheduled commissioning date the Contractor shall submit a supplement section to the Installation Plan addressing the procedures for system commissioning. By the time commissioning draws near the initially installed Tolling Zones may have been sitting idle for some time. The commissioning supplement shall define the steps necessary to assure that at the time of commissioning, all Tolling Zones will be fit and ready to enter revenue service.

The commissioning section shall describe the methodology and process required for going live with the new system. The section shall address the following:

- Identify the members of the commissioning team and their responsibilities;
- Provide a checklist of the steps required to test and verify the Tolling Zone and all other supporting systems are ready to process real toll traffic, including their sequence, timing, and the organization/individual responsible;
- Describe the nature and duration and staffing for the system monitoring that is to be conducted in the period immediately following the opening to traffic;



Approximately twenty (20) business days prior to the scheduled commissioning of the Toll Zone the Contractor shall schedule a meeting with the Commission to review the commissioning plans. The Commission will advise the Contractor of the actual commissioning date. As a result of the Tolling Zone inspections, Contractor's shall provide a letter to the Commission certifying the operational readiness of the entire system. If any exist, minor deficiencies in the Tolling Zone systems or MOMS shall be identified in this letter. Please refer to Section VI.1.2 regarding the Commission's use of the system with defects.

VI.11 WIRING DIAGRAMS

The Contractor shall prepare and update a detailed typical Tolling Zone Wiring Diagram as installed for the Tolling Zone. The diagram shall also include a Wiring Schedule depicting wire type, sizes and quantities. If installation of toll equipment wires, interconnections, etc., proves to be unique to a specific Tolling Zone, the Contractor shall also provide a separate Wiring Diagram of that particular Tolling Zone as part of the as built submittal. The Wiring Diagrams shall show all toll equipment, cables, wires, routes, connections, power sources and other equipment. All equipment shall be identified both by name and function. All cables and wires shall be identified as to in conduits, functions, point-to-point size, and location connections and color-coding.

The Wiring Diagrams shall be prepared under the conditions and standards established in the Shop Drawings section, as presented above.

Upon completion of the installation of the toll collection equipment and after final approval of Wiring Diagrams by the Commission, the Contractor shall deliver final versions.

VI.12 COMMUNICATIONS PLAN

Data communications between the Tolling Zones and the Commission's data facility is the responsibility of the Commission/Others. There will be limitations on the bandwidth available. The Contractor shall provide calculations showing the bandwidth requirements for the data traffic the Tolling Zone System will generate under normal and under various high activity conditions. Bandwidth estimates should address varying situations such as when a communication interruption has occurred and the stored data must be sent, the DVMS being viewed remotely, etc. The purpose of the Communications Plan is to ensure that the Commission provides the data bandwidth the Tolling Zone requires.

VI.13 MAINTENANCE/MAINTENANCE PLAN

The Contractor shall submit to the Commission a detailed Maintenance Plan. The plan shall include maintenance staffing and administration, dispatch procedures, communication requirements, preventive maintenance techniques and schedules, support from outside maintenance service (for example, computer manufacturers), final maintenance equipment list and other details as may be appropriate.

The Maintenance Plan shall include procedures to be used from the first use of the toll collection equipment through completion of the Warranty and Maintenance Period(s). The Plan shall address but shall not necessarily be limited to the following:



- Standards and General Procedures
- Equipment Maintenance
- Software Maintenance
- Tools
- Spare Parts and Inventory Control
- Maintenance On-line Maintenance System
- Emergency/Corrective Maintenance Procedures
- Preventative Maintenance and Schedules
- Support Services
 - Computer Maintenance Companies
 - Maintenance Support Groups
- Personnel
 - Staff Location
 - Qualifications
 - Training
- Maintenance Facilities/Workshop(s)
- Maintenance Records
- Failure Tracking and Corrective Action
- Reliability and Maintainability Analysis and Calculation
- Spare Parts Inventory Levels
- Maintenance Activity Reports

The Maintenance Plan shall define the preventative maintenance schedule, the MOMS messages, and the failure severity level for each type of MOMS message (see Section VII.1.3).

VI.14 MAINTENANCE AND SERVICE MANUAL

The Maintenance and Service Manual will be used primarily by the Contractor's maintenance staff but shall also be provided to in the event the Commission should at some point decide to take over the maintenance responsibility for the system. This document shall be comprehensive and shall provide complete detailed technical descriptions of maintenance operations including, but not limited to, the following:

- Preventive Maintenance Schedule;
- Trouble-Shooting Techniques;
- Corrective Measures, both temporary and permanent;
- Maintenance Techniques (routine, preventive, and remedial);
- Location and availability of support services for all major components;
- Point-to-point component wiring schematics and logic signal flows; and
- Assembly and disassembly drawings, including exploded view drawings.

This manual shall be prepared for technical personnel assigned to the maintenance of the toll collection equipment system. This manual shall include a general description, theory of operation, operator instructions, detailed electrical/electronic logic circuit analysis, mechanical functions, installation, test and trouble-shooting procedures, preventive and corrective maintenance procedures. The Maintenance Manual shall also contain diagrams, schematics,



layouts and parts lists required to service each component and circuit board utilized in the toll collection equipment system.

Standard service manuals for unmodified commercial products used in the toll collection system shall be acceptable if they contain details and accurate information in order to properly service the specific toll collection equipment supplied under this Contract. Diagrams and mechanical assembly diagrams do not have to be reduced or incorporated into the manuals if these drawings are provided with the manuals.

Maintenance Manuals shall be delivered in preliminary form to the Commission no later than 90 days following the commencement of I-80 toll collection operations.

VI.15 BILL OF MATERIALS (BOM) LIST

A comprehensive and detailed parts list for each and every component included in the toll collection equipment system shall be supplied. Parts shall be numerically encoded and tracked through the MOMS system, with all spare parts permanently encoded with the parts lists number for inventory purposes. Parts lists shall be categorized and related to particular system components (major subassemblies) and toll equipment.

Parts lists with component part numbers without descriptive information shall not be accepted. The parts lists shall contain the source vendor's name, identification numbers and codes or other means to identify the manufacturer of each component. Second sources shall be stated for all standard commercial components.

If a submitted part becomes unavailable for any reason, the Contractor shall, within 2 months, identify a suitable replacement part and submit a revised catalog cut and parts list



PART VII. WARRANTY/MAINTENANCE

VII.1 WARRANTY/MAINTENANCE GENERAL SCOPE

The Contractor shall provide System Maintenance for all supplied Software and Hardware for the Toll Collection System installed as part of this Project. The Toll Collection System is considered mission critical for the Commission and it is vital that the system has the highest availability possible. The work under this section shall include furnishing all labor, materials, test equipment tools, transportation, and support services as may be necessary for the maintenance of the Tolling Zone systems. Maintenance shall include all systems hardware and software, and Uninterruptible Power System; in general any and all hardware and software incorporated in the system and supplied under this Contract. Equipment provided by the Commission for installation by the Contractor such as the E-ZPass equipment is included in these maintenance requirements. The Contractor shall be responsible for replacement of UPS batteries as necessary. Software and Hardware maintenance shall be provided through qualified personnel and contractors acceptable to the Commission. The Contractor shall provide coverage by personnel either on duty or on call 24 hours a day, seven (7) days a week.

The Contractor shall perform all routine preventive, corrective, and emergency maintenance in accordance with the Maintenance Plan as approved by the Commission and shall be required to maintain and assure that the systems operate reliably and accurately.

The Contractor shall be responsible for maintenance from the time of its installation until the end of the last Maintenance Period. The Contractor shall provide a toll-free telephone number to receive phone-in reports of equipment problems that is staffed 24 hours per day, 7 days per week, including all holidays. In addition to responding to phoned in failure reports and Maintenance On-line Management System messaging, the Contractor shall proactively seek out the occurrence of failure by use of the DVMS video and by checking the Maintenance On-line Management System for failure messages that are below the priority level causing immediate corrective actions.

The work under this section is to be carried out in four (4) distinct Phases of the Project; Phase IV - Warranty – Operational/Preventive/Corrective Period 1, Phase V - Warranty – Operational/Preventive/Corrective Period 2, Phase VI and Phase VII - Warranty – Operational/Preventive/Corrective Period 3 & 4. The work provided under this section in each of the three Phases is identical.

VII.1.1 PREVENTIVE MAINTENANCE

Preventative maintenance shall be provided in accordance with the Maintenance Plan as approved by the Commission to keep the systems in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects. The Contractor shall develop the preventive maintenance schedule designed to ensure continued system performance.



VII.1.2 CORRECTIVE MAINTENANCE

The Contractor shall maintain a staff of trained personnel of sufficient quantity and quality to ensure that urgent repairs can be performed 24 hours a day, every day of the year. Corrective maintenance shall be undertaken when the Tolling Zone system functionality or performance has been impacted by failure or degraded operation of any part of the system.

VII.1.3 REQUIRED RESPONSE AND REPAIR TIME

The required corrective and emergency response times shall be determined by the failure severity level. The definitions of failure severity levels illustrated in Table 9 will be used to compute the required maintenance service response. The severity level is determined by the nature of the problem; primarily its impact on toll collection. The following severity levels determine the response times for corrective and emergency service.

Table 9 - Maintenance Severity Levels	
Failure Severity Level	Description
1	<p>Any circumstance in which Open Road Tolling Zone is rendered unreliable or unusable for toll collection purposes. This is defined as the situation when the ETC Reading, Automatic Video Image Capture sub-systems are not operating at the required performance levels defined in Table 4 - System Performance Requirements. Very limited failures of the Image Capture sub-systems as described in the discussion on severity level 2 below are exempted from being considered level 1.</p> <p>OR</p> <p>Any problem creating in an unsafe condition for the traveling public.</p>
2	<p>In a circumstance where the Video Image Capture subsystem is degraded but the problem is limited to impacting a single camera in a single lane.</p> <p>For MOMS, any MOMS system failure in which Tolling Zone failure monitoring is prevented.</p>

Note: The MOMS messages for each Service Level period the level the Failure Severity Level shall determine the response time by the maintenance unit as illustrated below in Table 10.



Table 10 - Tolling Zone Maintenance Service Levels and Response Times:

Failure Severity Level	Combined Average Response/Repair Time
1. where MPT is not required	2 hours after the failure
1. where MPT is required	4 hours after the failure or 2 hours after MPT is in place whichever is longer
2. where MPT is not required	8 hours after the failure
2. where MPT is required	8 hours after the failure or 2 hours after MPT is in place whichever is longer

Note: MPT = Maintenance and Protection of Traffic

As noted earlier the Commission is responsible for providing MPT. The combined response/repair time for corrective maintenance shall be measured as the elapsed time from the beginning of the period of degraded system performance to the time the reported problem is repaired.

The Contractor shall update the MOMS work order for the incident every time service is performed for corrective or emergency work. The report shall contain, but not be limited to, the location, Tolling Zone ID, equipment serial number and nomenclature, work or service performed, reported faults, parts used, time the problem was reported (for malfunctions not recorded automatically by the MOMS) and time the service was started and completed.

VII.1.4 SPARE PARTS

The Contractor shall provide, and maintain at all times an inventory of all spare parts required to maintain the system (a one year supply). Inability to complete repairs due to the unavailability of spare parts shall not relieve the Contractor of Maintenance obligations.

The Contractor shall maintain a comprehensive, accurate, and auditable parts and spares inventory at a system level by using the MOMS maintenance data base.

At the conclusion of the Contractor’s Maintenance obligation all remaining spare parts, test equipment and maintenance tools, shall be turned over to the Commission. The spares complement shall be sufficient quantity to provide for a projected one year maintenance interval.

VII.1.5 MAINTENANCE FACILITIES/WORKSHOP

The Contractor shall be responsible for the provision of maintenance office and work facilities equipped and capable of supporting the maintenance of hardware and software for the entire system. The Contractor shall supply a facility to house spare parts, documentation, communications, and personnel necessary to maintain the entire system.

VII.1.6 MAINTENANCE RECORDS

The Contractor shall maintain current and accurate records for all system maintenance work. The records shall be organized and managed by a computerized data and information management



system as part of MOMS. All system equipment and hardware maintenance events detected and/or recorded by maintenance staff shall be recorded on the MOMS data base.

The MOMS data base shall include, but shall not be limited to, location, equipment nomenclature, serial number, name, date, technician ID, type of failure, date-time of failure, date-time of response to the site and date-time time returned to service, preventive maintenance work, scheduled work, work repair code, failure and repair history, and statistical data on MTBF and MTTR.

The Contractor shall provide a weekly maintenance summary report to the Commission until the completion of the 90 day Operational Test after which the report shall be submitted monthly. The Commission reserves the right to review the maintenance records and data base files for compliance with system performance requirements.

For every monthly maintenance payment period the Contractor shall prepare a report that tracks malfunctions, the times that malfunctions were recorded, the time the technician responded to and the time the technician completed the repair. Further, the response and repair times shall be compared to the required response and repair times under the Severity Level of the failure as described above.

For each occurrence wherein the Contractor fails to achieve the Combined Average Response/Repair time for a system interruption as set forth in Part VII.1.3, Table 10, the Commission shall be entitled to penalties for the resulting loss of revenue for all time in excess of the time set forth in Table 10.

Penalties will be calculated utilizing the average Tolling Zone(s) income for the affected Tolling Zones for the days(s) and time(s) for the thirteen (13) weeks immediately preceding the system failure. The damages will be the difference between the tolls, if any, collected during the relevant time period and the 13 week average.

VII.1.7 FORCE MAJEURE REPAIRS

The Contractor shall repair toll system elements that are damaged by Force Majeure events as described due to a circumstance which is beyond the control of the Contractor including but not limited to war, riots, civil commotion, government intervention or intervention by local authorities, traffic accidents, natural disasters, fire, explosion, or any similar cause. After effecting the repair and presenting acceptable evidence of a Force Majeure repair and documentation of the costs incurred the Contractor shall be reimbursed by the Commission on a time and material basis.

Certain equipment failures have long repair times and special consideration is needed. As an example the Proposer may make interim repairs by using temporary replacement parts and methods to restore operation. This action will serve to satisfy the repair and response requirement until permanent solution can be scheduled.



VII.1.8 COMMUNICATIONS

The Contractor shall provide the Commission with a list of Project Technicians, Supervisors, and Managers and their associated cell phone numbers and pagers and will update this list any time there is a change. All technicians shall carry a cell phone and laptop computer provided by the Proposer. Supervisory personnel and managers are required to also carry a cell phone to ensure immediate lines of communications in times of emergency or need.

VII.1.9 SYSTEM AVAILABILITY

The Contractor will be required to maintain an average Tolling Zone availability of 99.97% where the percent availability of a Tolling Zone is computed by dividing the number of hours in a year of Tolling Zone operation without a Priority 1 failure condition divided by the total number of hours in the year. Preventative maintenance and equipment repair shall not affect or be included in the baseline availability calculations so long as equipment is repaired within the specified guaranteed repair time. The Proposer will submit monthly, quarterly, and annual reports showing availability percentages and calculations by lanes, plazas, and the System.

VII.1.10 STAFFING

The Contractor shall maintain a full time system maintenance staff in order to ensure that the system availability is accomplished. The Commission reserves the right to review resumes for and to interview and approve members of the Contractors support staff. The Commission reserves the right to request the Contractor for background checks for any Contractor employee or contracted employee with respect to the construction and maintenance of this project. Any changes to staff throughout the life of the project should be reported to the Commission.

The Contractor agrees to abide by the conditions set forth in all system security policies of the Commission. All employees who access data must agree to terms of the policies of the Commission.

VII.2 SOFTWARE SUPPORT MAINTENANCE/ENHANCEMENTS

The Contractor shall not make any enhancements, modifications, or take corrective action to the implemented system without the written consent of the Commission. The Proposer will utilize the Commission's ECO (Engineering Change Order) process for documenting all changes to the system. The process will be further defined during the design phase of the project with the Contractor.

Changes shall not be made to the system with out first being fully tested including regression testing. The Contractor shall develop a test plan for any all such changes. The Proposer will schedule times and locations where changes to software will be tested.

The Contractor shall provide:

1. Coordination for problem resolution and to modify system functionality as needed.
2. Software Installation – Installation of new software, including but not limited to, application software, databases, operating systems and other supporting software.



3. System monitoring – System monitoring and regular timely reporting of findings to the Commission.
4. Database Monitoring – Database monitoring, maintenance, upgrades and tuning as needed and as agreed upon by the Commission.
5. Restore – Contractor will be responsible for performing restore and recovery of any component of the system as required after failure.
6. Migration and Upgrades – The Contractor will be responsible to perform migration and upgrade of the system, including software and hardware if required.
7. Help Desk Assistance – The Contractor will be responsible for assisting the Commission in answering user questions and identification of errors.
8. Warranties – The Contractor shall track hardware warranties for all hardware associated with this contract to avoid unnecessary equipment repair costs.
9. Troubleshooting – The Contractor will troubleshoot and resolve plaza and lane problems and will take corrective action as needed. Prior to doing any work the Contractor will notify the Commission.

All software will be entered into an escrow account selected and paid for by the Commission and agreed upon by the Proposer.

VII.2.1 SYSTEM REFRESH

As various hardware and software elements of the system become obsolete, no longer supported (in the case of software) or no longer available the Contractor shall incorporate appropriate substitutes in the system design and existing installations. The Contractor shall not purchase any such equipment or software without prior written approval from the Commission.

VII.2.2 DEVELOPMENT RESOURCES

The Contractor shall retain the resources necessary to maintain, enhance, and refresh the system for the full duration of the Contract period.

VII.2.3 DOCUMENTATION

As corrections and enhancements are incorporated into the system, all supporting documentation affected by the changed shall be submitted by the Contractor to the Commission for approval. All documentation will be entered into the escrow as approved by the Commission and agreed upon by the Proposer.



PART VIII. CONTRACTOR PROPOSED OPTIONS

In response to this section the Proposer may present a technical description of any options that it wishes to present to the Commission for inclusion in, to supplement or to replace elements of its basic proposal. Changes to the operation or performance levels of the basic proposal should be fully described. The cost of each such proposed option should be separately reflected in a separate set of price sheets showing the cost impacts (increases or decreases by price sheet category) of that proposed option on the basic cost proposal. This opportunity is open only if the Proposer has made an acceptable basic proposal responsive and in compliance with the requirements of the RFP.

Submission of pricing for proposed options should be an additional set of the Price Sheets in Attachment A labeled with the name of the option that details the cost impacts (plus or minus) on the cost of the base proposal. In the technical proposal general references may be made to cost such as to say the net impact of the option would be to lower or raise the system cost but no specific dollar impacts for the options should be included in the Technical Proposal; this should only be included in the Price Proposal.

Options such as the following could be of interest to the Commission:

GENERAL

Options that would result in an improved cost/benefit tradeoff over what may be defined or suggested by the technical section of this RFP

SPECIFIC

1. A gantry design that permitted the servicing of gantry mounted equipment from above and alleviated the need to employ Maintenance of Traffic procedures to service such equipment.
2. Use of high speed weigh-in-motion subsystems to either permit the vehicle classification in the manner currently in effect on the mainline Turnpike or to permit a transition to such a method sometime after I-80 tolling begins.



Pennsylvania
Turnpike
Commission

Open Road Electronic Toll Collection System on Interstate 80 in
Pennsylvania
August, 2008
Final

ATTACHMENT A – PRICE SHEET

Attached separately as an Excel Spreadsheet.



Pennsylvania
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Commission

Open Road Electronic Toll Collection System on Interstate 80 in
Pennsylvania
August, 2008
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ATTACHMENT B – GENERAL PROVISIONS

ATTACHMENT B

Pennsylvania Turnpike Commission

**Open Road Electronic
Toll Collection System on
Interstate 80 in Pennsylvania**

RFP 08-10340-1540

GENERAL PROVISIONS

SECTION 1 — ABBREVIATIONS AND DEFINITIONS OF TERMS

1.1 MEANING OF TERMS - These specifications are generally written in the imperative mood. In sentences using the imperative mood, the subject, "the Contractor," is implied. Also implied in this language are "shall," "shall be," or similar words and phrases. In the Material sections, the subject may also be a Vendor, Fabricator, or Manufacturer, who may be supplying material, products, or equipment for use on the project. The word "will" generally pertains to decisions or actions of the Commission and/or Representative.

In these specifications or on the drawings, the following words or similar words refer to actions of the Commission and/or Representative, unless otherwise stated: "directed," "required," "permitted," "ordered," "designated," "prescribed." Also, the words "approved," "accepted," "acceptable," "satisfactory," "considered," or words with similar intent, mean by or to the Commission and/or Representative, subject to further review, as permitted by law or permitted elsewhere in these specifications.

In these specifications, reference to a subsection of the specifications includes all general requirements of the section of which the subsection is a part.

In these specifications, the words "or equal," referring to a product, material, or process, mean "equal as determined by the Commission and/or Representative."

In these specifications, the words, "as indicated," or "indicated" mean "as indicated or indicated on the prepared contract plans."

1.2 ABBREVIATIONS — The following is a list of abbreviations used in these specifications, in the proposal, and on the drawings. The list includes the meanings along with the abbreviations.

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
DCNR	Pennsylvania Department of Conservation and Natural Resources
DEP	Pennsylvania Department of Environmental Protection
FSS	Federal Specifications and Standards (General Service Administration)
IEEE	Institute of Electrical and Electronic Engineers
MUTCD	Manual on Uniform Traffic Control Devices (FHWA)
NEC	National Electrical Code

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NEMA	National Electrical Manufacturing Association
NESC	National Electrical Safety Code
NFPA	National Fire Prevention Association
OSHA	Occupational Safety & Health Administration
PENNDOT	Pennsylvania Department of Transportation
PTM	Pennsylvania Test Method
QC	Quality Control
SAE	Society of Automotive Engineers
UL	Underwriters Laboratories, Incorporated
U.S.C.	United States Code

1.3 DEFINITIONS --

MPT – MAINTENANCE AND PROTECTION OF TRAFFIC – Required whenever there is any work within the Tolling Zones.

ACTIVE WORK ZONE – The portion of a work zone where construction, maintenance or utility workers are on the roadway or on the shoulder of the highway, and is adjacent to an open travel lane.

ADDENDUM - A public document issued before the receipt of proposal, which revises, modifies or otherwise changes published specifications and contract documents.

ADDITIONAL WORK — Work, of a type already provided by the Contract and for which the Contract has established a unit price.

AGENCY HEAD – The Chief Executive Officer of the Commission or authorized designee.

AGREEMENT - The written agreement, including all exhibits, schedules and other attachments hereto, as the same may be supplemented or amended from time to time, between the Commission and the Contractor for the providing of the work and services required for the project.

MINIMUM/MAXIMUM OPERATING TEMPERATURE - The measured temperature in the degrees Fahrenheit (°F) in the shade, not in the direct rays of the sun, and away from artificial heat.

AS-BUILT DRAWINGS - A set of drawings and cross sections provided by the Contractor for the purpose of showing the actual installation. Changes are to be made in a neat and orderly manner in red marking and are to be true to applicable scales. The As-Built Drawings will become the property of the Commission at the completion of the project.

AUTOMATIC VEHICLE CLASSIFICATION (AVC) - A system for automatic vehicle detection and classification

AWARD — The Commission's acceptance of a proposal.

CALENDAR DAY — Every day shown on the standard calendar.

CHANGE ORDER - An order, signed by the Representative, authorizing the performance of additional or extra work.

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CHIEF ENGINEER — The Engineer in charge of the Commission's Engineering Department or authorized designee.

CHIEF EXECUTIVE OFFICER – The Chief Executive Officer of the Commission or authorized designee.

COMMISSION — The Pennsylvania Turnpike Commission.

COMMISSION SPECIFICATIONS – The specifications of the Commission that replace or supersede the corresponding sections of Publication 408.

CONSULTING ENGINEER - The Engineer employed by the Commission as Consulting Engineer in accordance with Trust Indenture requirements.

CONTRACT — The written agreement between the Commission and the Contractor for the performance of the Work and the Project.

The contract includes the following: The executed Contract or Purchase Order; Plans; Specifications; Performance Bond; Payment Bond; Insurance Certificates; Notice to Proceed; and all change orders and supplemental agreements that are required to complete the performance of the Work and of the Project.

CONTRACT DOCUMENTS – Those documents setting forth the rights and obligations of the Commission and the Contractor with respect to the Project.

CONTRACTOR DOCUMENTS – Those documents developed by the Successful Proposer/Contractor and provided to the Commission by the Contractor/Successful Proposer in accordance with the requirements of the Project and the Contract.

CONTRACT ITEM (PAY ITEM) — A specifically described unit of work for which a price is provided in the contract.

CONTRACTING OFFICER – The Chief Executive Officer or authorized designee.

CONTRACTOR — The individual, firm, partnership, or corporation awarded the contract; acting directly through agents or employees, or the Surety in case of default.

CUSTOMER SERVICE CENTER (CSC) - Provides customer interface for all activities that include account establishment, transponder issue, retail distribution, account management, problem resolution, operating call center, and providing web, and reconciliation interfaces.

DEPARTMENT — Pennsylvania Department of Transportation.

DRAWINGS — See "PLANS".

ELECTRONIC TOLL COLLECTION (ETC) - A system of integrated devices and components that permit the automatic recording of vehicle transactions through electronic media in a toll revenue collection system.

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ENGINEER — An individual licensed and registered under the Laws of the Commonwealth of Pennsylvania designated by the Chief Engineer, acting directly or through a duly authorized representative, acting within the scope of the particular duties assigned or the authority given.

EQUIPMENT – With respect to the Project, the equipment, hardware, parts, supplies and other materials and supplies necessary for providing the products and performing the services necessary for the Project or otherwise furnished by the Contractor as part of the Work for the Project.

EXTRA WORK — Changes resulting in significant additions or deletions to the amount, type or value of the Work for the Project, as from time to time directed by the Commission.

E-ZPASS PLUS - The program, offered to E-ZPass customers who replenish their accounts using credit card, which provides the ability to use the E-ZPass transponder to pay for parking.

FABRICATOR - A firm, company, or individual supplying fabricated material for the project.

FINAL INSPECTION — The inspection, conducted by the Representative, to determine if the project, or any substantial portion thereof, has been satisfactorily completed, according to contract requirements.

INTER AGENCY GROUP (IAG) - A group consisting of 23 member agencies in 12 states which has deployed and has been operating for a number of years an electronic toll collection system known as E-ZPassSM, which utilizes a common technology to enable the seamless collection of tolls electronically throughout the region.

INTERCHANGE – An interchange of the Pennsylvania Turnpike specified in the Contract.

INTERCHANGE CONSTRUCTION DOCUMENTS – With respect to an Interchange, the plans, drawings, specifications and other documents prepared or approved by the Commission relating to the design and construction work for the rehabilitation, upgrade and improvement of such Interchange.

IN WRITING - Communication between parties delivered or sent, and received, in the form of a written letter, e-mail, facsimile, telegram, or mailgram.

LABORATORY - The testing laboratory designated by the Commission.

MAINTENANCE ON-LINE MANAGEMENT SYSTEM (MOMS) - An automated, fully integrated system for monitoring the status of operational equipment in real time, to record equipment and process failures, notify maintenance personnel, generate and track work orders, maintain preventative maintenance schedules, generate repair history, and maintain parts inventory and asset management.

MANUFACTURER - A firm, company, or individual manufacturing material for the project.

MATERIAL - Substances specified for use in the project construction.

MILESTONE DATE — The date on which a specific portion of physical contract work is to be completed, before the Required Completion Date of all contract work.

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NOTICE TO PROCEED DATE — The date on the Notice to Proceed letter.

OPTICAL CHARACTER RECOGNITION (OCR) - A software process that recognizes characters which extracts the license plate numbers from the image of the license plate and converts them to text.

PAYMENT BOND — The approved form of security, furnished by the Contractor and the surety, as a guaranty to pay promptly, or cause to be paid promptly, in full, such sums as may be due for all material furnished, labor supplied or performed, rental of equipment used, and services rendered by public utilities in, or in connection with, the work under contract.

PERFORMANCE BOND — The approved form of security, furnished by the Contractor and the surety, as a guaranty on the part of the Contractor to execute the work, in accordance with the terms of the specifications and Contract.

PLANS — The approved documents or drawings, or exact reproductions of them, provided by the Commission, as information to the Contractor. The plans show the location, character, dimensions, approximate quantities, and other details of the prescribed work, including floor plans, elevations, sections and details; plans also include cited Standard Drawings. However, subsurface soil and geological data (e.g., the Soil Survey Report and Profile and Core Borings) are excluded from this definition.

PROJECT — All of the work described in the Contract, including the design, fabrication, installation, testing, and integration of the goods and services as more specifically set forth in the Contract Documents.

PROJECT MANAGER – With respect to the Project, the Commission’s duly authorized representative designated to manage such Project.

PROPOSER - Any individual, firm, partnership, or corporation, submitting a proposal for the work contemplated and acting either directly or through an authorized representative.

PROPOSAL GUARANTEE – The security furnished with the proposal, to guarantee that the proposer will enter into a contract if the proposal is accepted.

PUBLICATION 408 – Publication 408 of the Pennsylvania Department of Transportation, as the same may be updated, amended, supplemented or restated from time to time, or any subsequent publication of the Pennsylvania Department of Transportation that replaces or supersedes Publication 408.

QUALITY CONTROL (QC) PLAN - A Contractor's or Vendor's prepared plan, submitted to and reviewed by the Representative, describing the proposed QC system. This plan contains, as a minimum, an inspection schedule, sample schedule, testing schedule, and required laboratory inspection reports.

QUALITY CONTROL (QC) SYSTEM - A system of controls, inspection, and tests, fully documented, providing reasonable assurance that all materials, products, and completed construction submitted for acceptance, conform to specifications.

REGULATIONS - The Commission will provide regulations applicable to the Turnpike.

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REPRESENTATIVE - The authorized representative acting on behalf of the Commission for this Contract.

REQUIRED COMPLETION DATE — The date on which all Contract work, including any authorized additional or extra work, is to be completed. The Required Completion Date is: (1) the date which follows the Notice to Proceed Date by the number of calendar days allowed for Contract completion shown in the Contract plus any time extensions issued in writing by the Representative less any time reductions issued in writing by the Representative; or (2) the completion date shown in the Contract plus any time extensions issued in writing by the Representative less any time reductions issued in writing by the Representative.

REQUEST FOR PROPOSALS - The documents, designated by the Commission, containing Project requirements and other information upon which a proposal for the Project to be constructed is to be based. The Request for Proposals includes the Plans, Specifications, Special Provisions, referenced Standard Drawings, Addenda, and all other documents referred to therein, whether or not attached.

SHOP DRAWINGS - See WORKING DRAWINGS.

STANDARD DRAWINGS — Approved drawings, showing standard details, produced to be used repeatedly on projects.

STATE — The Commonwealth of Pennsylvania.

SUBCONTRACTOR - Any individual, partnership, firm or corporation, other than an employee of the Contractor, who/which undertakes, to furnish labor, services, equipment, supplies or other materials in connection with the Work on behalf of the Contractor.

SUPERINTENDENT - The Contractor's authorized representative in charge of the work.

SUPPLIER - A firm, company, or individual supplying material for the project.

SURETY — A corporate body, which is bound with and for the Contractor, for the satisfactory performance of the Contractor's work and for the prompt payment in full for material, labor, equipment rentals, and utility services, as provided in the bonds.

TRAFFIC CONTROL PLAN — A developed method or scheme for safely and efficiently moving traffic through or around a work zone.

TURNPIKE – The Pennsylvania Turnpike.

UNINTERRUPTIBLE POWER SUPPLY (UPS) - A battery backup power system in the event utility power becomes unavailable.

UTILITY ADJUSTMENT - The act of placing, setting, replacing, resetting, relocating, adjusting, reconstructing, altering or removing a Utility Infrastructure.

UTILITY INFRASTRUCTURE - A public or private facility or structure, whether or not owned by a utility, that is or will be in, on, under, or over the project site or a waste or borrow area designated in the

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proposal, and that either must be placed, set, replaced, reset, relocated, adjusted, reconstructed, altered or removed in order for the contract work to be performed or otherwise interferes with the performance of the Contract work.

VENDOR - A firm, company, or individual supplying material or services for the project.

VIDEO IMAGE CAPTURE SYSTEM (VIC) - Video or still image based system located at toll lanes used to record license plate images of selected vehicles (to be defined in the Business Rules) in video or still image form.

WORK — The furnishing of all work, tasks, matters and things, material, labor, equipment, and other incidentals necessary or convenient to successful project completion, plus the fulfillment of all duties and obligations imposed by the Contract and required to be done by the Contractor pursuant to the Contract.

WORKING DRAWINGS — Required shop drawings, erection plans, falsework plans, stress sheets, framework plans, cofferdam plans, bending diagrams for reinforcing steel, and any other supplementary plans or similar data, all prepared by the Contractor.

WORK ZONE – The area of a highway where construction, maintenance or utility work activities are being conducted, and which should have traffic-control devices installed according to Title 67 of the Vehicle Code.

SECTION 2 — PROPOSAL REQUIREMENTS AND CONDITIONS

2.1 EXAMINATION OF THE REQUEST FOR PROPOSALS, PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK —The Proposer is required to carefully examine the request for proposals. The submission of a proposal will be considered proof that the Proposer has made such examination and understands the conditions to be encountered; the character, quality, and quantities of work to be performed; the material to be furnished; and the requirements of the plans, specifications, and request for proposals. The Commission will make no allowance or concession for a Proposer's failure to make the required examination.

2.2 ANTI-COLLUSION REQUIREMENTS - The authorized signer of the proposal, under penalty of perjury as provided in 18 Pa. C.S.A. Section 4904, or if applicable, 18 U.S.C., Section 1020, certifies that he or she is authorized to make and does make the following statement on behalf of the Proposer:

(a) The proposal item prices and the total proposal amount have been arrived at independently and without consultation, communication, or agreement for the purpose of restricting competition with any other contractor, proposer, or potential proposer.

(b) Neither the item prices nor the total proposal amount, and neither the approximate proposal item prices nor approximate total proposal amount, have been disclosed to any other firm or person who is a proposer or potential proposer, and they will not be disclosed before proposal opening.

(c) No attempt has been made or will be made to solicit, cause, or induce any firm or person to refrain from proposing on this project, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.

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(d) The proposal submitted by the proposer 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.

(e) The proposer has not offered or entered into a subcontract or agreement regarding the purchase of materials or services from any firm or person, or offered, promised, or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for an agreement or promise by any firm or person to refrain from proposing or to submit a complementary proposal on this project.

(f) The proposer has not accepted or been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for this firm's submitting a complementary proposal, or agreeing to do so, on this project.

(g) The authorized signer of the proposal has made a diligent inquiry of all members, officers, employees, and agents of the proposer with responsibilities relating to the preparation, approval, or submission of this firm's proposal on the project and has been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, act, or other conduct inconsistent with any of the statements and representations made in this Statement.

(h) No attempt has been made to take any action in restraint of free competitive proposing in connection with the proposal.

(i) It is understood that if any incidents resulting in conviction or being found liable are specified in Section 102.07(j), the Pennsylvania Anti Bid Rigging Act, 73 P.S. 1611 et. seq. provided that it does not prohibit a governmental agency from accepting a proposal from or awarding a contract to that person, but may be a ground for administrative suspension or debarment at the discretion of a governmental agency under rules and regulations of that agency.

(j) The proposer, its affiliates, subsidiaries, officers, directors, and employees are not aware that they are currently under investigation by any governmental agency and have not in the last 3 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 on any public contract, except as indicated on a separate page included with the proposal.

The authorized signer of the proposal hereby states that he or she understands and acknowledges that the above representations are material and important, and will be relied on by the Commission, in awarding the contract for which the proposal is submitted. He or she and their firm understand that any misstatement in this statement is and shall be treated as fraudulent concealment from the Commission of the true facts relating to the submission of proposals for this contract.

SECTION 3 — AWARD AND EXECUTION OF CONTRACT

3.1 AWARD OF CONTRACT — After review, when a proposal received has been determined by the Commission to be satisfactory, the contract may, if determined to be in the Commission's best interest, be awarded to the proposer selected by the Commission.

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Contracting corporations, which are chartered in a state other than Pennsylvania, as well as individuals or firms doing business under fictitious names, are required to register with the Secretary of the Commonwealth and obtain a certificate authorizing them to do business in Pennsylvania, before they can be awarded a contract.

The selected proposer must return a fully executed copy of the contract to the Commission within the (10) calendar days of the notice date of the notice awarding the contract. If the selected proposer fails to return a the fully executed contract within the specified time period the Commission may, at its discretion, rescind the award and award the contract to the next best qualified proposer.

3.2 CANCELLATION OF AWARD — The Commission reserves the right to cancel the award of any contract at any time when such cancellation is in the best interests of the Commission. In the event of such cancellation, no payment will be made for damages of any other kind including, but not limited to, lost profits.

3.3 SURETY BONDS —

Contracts. When awarded the Contract, furnish a Performance Bond, with sufficient surety or sureties, in an amount equal to one hundred percent (100%) of the Contract price but no less than \$1,000,000.00. 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 one hundred percent (100%) of the Contract price. Have a corporate surety, legally authorized to transact business in the State and satisfactory to the Commission, 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.

All bonds required under the Contract must be signed by a resident Pennsylvania Agent of the issuing company.

3.4 RELATED AND CONTIGUOUS WORK — During the time the Contract is in effect, the Department, Commission Maintenance Forces, PENNDOT Maintenance Forces and other contractors may be engaged in work related or contiguous to the work under contract. All forces will be required to cooperate to ensure satisfactory and timely completion of all of the work. In case of any dispute arising from related or contiguous work, the rights of the various parties involved will be established by the Representative in order to ensure completion of the various phases or portions of the work in general harmony.

The fact that other contractors and persons may be doing work in or about the site of the work of this Contract in no way or to any extent relieves the Contractor from liability for loss or damage to the work nor will the Commission assume any liability for loss attributable to delay caused by other contractors.

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SECTION 4 — SCOPE OF WORK

4.1 INTENT OF RFP REQUIREMENTS — The intent of the RFP Requirements provided by the Commission is to provide background information associated with performance of the project work to be completed as part of this RFP.

The Commission assumes no liability for material ordered and supplied in advance of any operation and not used on the project.

4.2 ALTERATION OF RFP REQUIREMENTS — The Commission reserves the right to order, at any time during the progress of the work, increases or decreases in quantities and alterations in the Contractor requirements as may be necessary or desirable. Any such order will be in writing by the Commission. Also, should any item contained in the proposal and Contract be found unnecessary for the proper completion of the work, a written order will be given to eliminate such item from the Contract. Such increases, decreases, eliminations, and/or alterations will not invalidate the Contract, nor release the surety.

If the aforementioned changes in quantities or alterations of the Contract documents will significantly increase or decrease the cost of performing the work directly affected, perform such work only when authorized in writing.

4.3 EXTRA WORK — Anticipate that extra work might be necessary in order to complete the project as contemplated. Perform extra work in accordance with the specifications and only when authorized in writing.

4.4 CLEANING OF PROJECT SITE — Clean and remove surplus and discarded material, equipment, and temporary structures from the project and adjacent properties. Remove debris and objectionable material from areas used or disturbed by the Contract operations on, or within sight of, the highway. Remove paint marks or spills, stains, rust marks, oil, or any other unsuitable marks, as directed.

The project will not be considered complete until the above work has been completed.

4.5 DISPOSAL OF EXCESS EQUIPMENT AND WASTE MATERIAL — All excess, surplus and waste materials encountered or caused by the course of the work of this project not deemed salvageable by the Commission are to be removed from the I-80 Right-of-Way immediately after being dismantled and their disposition is the responsibility of the Contractor, unless otherwise specifically directed by the Representative to deliver such items to the Maintenance Building designated by the Representative.

Provide copies of all arrangements, leases or other negotiations for the disposal of the unsuitable materials to the Representative. Be responsible for obtaining any permits necessary for proper disposal.

All labor, material, equipment, licenses, fees, permits and other work relative to the disposal of excess waste and unsalvageable material is the responsibility of the Contractor, and no separate nor additional payment will be allowed therefor.

4.6 ADVERTISEMENT FORBIDDEN - Advertisements are not to be exhibited on the project. A sign bearing the name and address of the Contractor, not exceeding 3 feet x 6 feet, may be exhibited by the Contractor to identify his office building.

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SECTION 5 — CONTROL OF WORK

5.1 AUTHORITY OF THE COMMISSION—

(a) General. The representatives and agents of the Pennsylvania Turnpike Commission, representatives of the Pennsylvania Department of Transportation and the Consulting Engineer, will be permitted at all times to inspect all work, materials, payrolls, records of personnel, invoices of materials and other relevant data and records.

To prevent disputes and litigation, the Commission will:

- determine the quantity of the kinds of work and the quality of material for which payment will be made under the Contract;
- determine the answer to questions in relation to the project and its construction; and
- decide differences concerning the performance of the work covered by the Contract.

All such determinations, decisions, directions and explanations needed to complete, explain or make definite any provisions of the specifications and plans will be given promptly to the Contractor.

(b) Authority to Suspend Work. The Commission may suspend the work, wholly or in part, for the following reasons:

- failure to carry out orders;
- failure to comply with any provisions of the Contract; or
- unforeseen conditions not anticipated in estimating the Contract time necessary for the completion of the work.

Written notification will be given of the suspension and the reason(s) for the suspension.

(c) Review and Acceptance. Review and acceptance by the Commission as specified, stated, or indicated in the Contract will be made on the basis of limited, general inspections.

It is understood that, because of such limited reviews, ultimate responsibility for the satisfactory completion of the project, including but not limited to:

- the quality of all materials;
- the quality of all workmanship;
- compliance with all terms of the contract;
- sufficiency, correctness, and accuracy of all working or shop drawings; and
- sufficiency of all QC Plans,

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rests solely with the Contractor. Notwithstanding review and/or acceptance, save and hold harmless the Commission from the consequences of all defective work as well as all defects, errors and omissions in the working or shop drawings, QC Plans, and plans of every other kind prepared by the Contractor.

5.2 DRAWINGS — The following drawings, when applicable, are required to perform the work:

(a) Contractor Drawings. These drawings will be furnished by the successful Proposer/Contractor. Keep one set of the drawings available on the project. The Contractor shall prepare for approval by the Commission civil, structural, fabrication, installation, integration and electrical design drawings and specifications for this project that clearly specify the intended construction means, methods and materials for all of the Proposer's work on this project. In addition to the means, methods and materials, the successful Proposer's plans and specifications shall clearly delineate locations of equipment, raceway, and supports, sizing and type of wire, raceway and cabling, including all interconnecting wiring and cabling diagrams as well as one line power distribution, data, and communication diagrams. The successful Proposer's plans and specifications shall be prepared and stamped by a Pennsylvania licensed engineer. The drawings should be prepared in accordance with the Commission's instructions, which are attached to these General Provisions.

(b) Working and Shop Drawings. Shop drawings shall be prepared by the Contractor in accordance with the requirements of the design drawings, Commission standards/specifications, contract special provisions and Pennsylvania Department of Transportation Specifications Publication 408.

Unless stated otherwise in the contract special provisions, it is anticipated the following items will require submission of shop drawings:

- (a) Fabricated structural steel including, but not limited to, the following:
 - (1) ORT equipment gantry supports
 - (2) Sign supports
 - (3) ORT equipment mounts
- (b) Light Poles
- (c) Railings and/or barrier, sidewalk or protective barrier
- (d) Electronic equipment and assembled built component equipment
- (f) Racks
- (g) UPS equipment
- (h) Data, communication, and fiber Cabling
- (i) Power conductors and grounding.
- (j) Pull box, junction boxes and enclosures
- (k) Data, communication and video one line diagram
- (l) Electrical Load center panel schedules

The Commission may require shop drawing submittals for items not included in this list.

The sections and dimensions shown on the contract drawings are typical sections and dimensions which should be applicable to the greater part of the work. Make all working or shop drawings which may be required in addition to the contract drawings. Submit five (5) copies of all working or shop drawings made by the Contractor to the Representative for his acceptance which acceptance, if given, will be indicated by his countersigning two (2) sets of such working or shop drawings and returning the same

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to the Contractor. Should the working or shop drawings not be accepted by the Representative, the Representative will return one (1) set of such working or shop drawings with the necessary corrections, revisions and additions indicated thereon; and the Contractor will make such revisions and additions and again submit five (5) copies of drawings for the acceptance of the Representative. No work called for by said working or shop drawings is to be done until the acceptance of the Representative is obtained which will be given or refused within thirty (30) days after delivery to him at his office of such drawings. The acceptance of shop drawings by the Representative does not relieve the Contractor of the responsibility for the accuracy of such working or shop drawings. Immediately upon final acceptance of such working or shop drawings by the Representative, furnish the Representative with such additional shop drawings showing any as-noted conditions and submit to the Representative upon completion of affected operation but before the completion of the project work. These reproducible drawings may be prepared in ink on (3) mil minimum thickness Mylar sheets or in such equivalent manner and with such material as will be acceptable to the Representative and satisfactory for permanence and reproduction.

Thoroughly check each shop drawing or other required submissions before submission to the Representative. Place the following certification on every sheet of every submission:

"WE HEREBY STATE THAT WE HAVE REVIEWED, INSPECTED AND CHECKED THE INFORMATION SUBMITTED AND CERTIFY FOR ITS ACCURACY AND COMPLIANCE WITH THE PLANS, SPECIFICATIONS AND SURROUNDING CONDITIONS."

Contractor

(per) _____
Signature

Date

Properly label samples, drawings and catalog cuts submitted for review to indicate the specific service for which materials or equipment are to be used and the referenced section, page and paragraph number of the specifications and/or applicable drawing number.

If any aspect of a submittal deviates from the requirements of the contract drawings or specifications, note such deviation in writing at the time of submission.

All drawings and calculations for formwork, shoring or load-bearing falsework submittals are to be signed and sealed by a Professional Engineer registered in the State.

(c) As-Built Drawings. The Contractor will provide an additional set of Drawings and Cross Sections which are to be used exclusively to show the actual installation. Make changes in a neat and orderly manner and in "Red Marking". Changes must be true to scales applicable to the Drawings. Upon completion of the project, the As-Built Drawings become the property of the Commission.

5.3 CONFORMITY WITH DRAWINGS AND SPECIFICATIONS —

(a) General. Perform work within reasonably close conformity to the Contractor drawings.

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(b) Determination by the Commission. For each individual case, the Commission will determine the limits of reasonably close conformity; the judgment given will be final and conclusive.

If it is determined that material or the finished product in which the material was used is not within reasonably close conformity, but that reasonably acceptable work has been produced, the Commission will then determine if the work will be accepted and remain in place. In this event, written documentation will be provided for acceptance by required contract modification, and/or to provide for an appropriate adjustment in the contract price for such work or material.

If it is determined that material or the finished product is not within reasonably close conformity and has resulted in an inferior or unsatisfactory product, remove or replace it.

5.4 COORDINATION OF DRAWINGS AND SPECIFICATIONS — Perform the work in accordance with the intent of the Contractor drawings and specifications. Do not take advantage of any error on/or omission in the drawings or discrepancy between the plans and specifications. In the event such an error, omission, or discrepancy is discovered, immediately notify the Commission. Failure to notify the Commission will constitute a waiver of all claims for misunderstandings, ambiguities, or any other reasons resulting from the errors, omissions, or discrepancies. When required, corrections and interpretations necessary for the fulfillment of the drawings and specifications will be made. Do not use scaled measurements where dimensions on the drawings are given or can be computed.

If any special provisions, supplemental specifications or information on the plans conflict with these general conditions, the special provisions, supplemental specifications or information on the plans will govern. If any conflict exists between any portion of the plans designed specifically for this project and any portion of Standard Drawings, the former will govern.

When required, the Commission will determine and order, in writing, any modifications or changes in the plans, Standard Drawings, or specifications to update, adjust, accept, or complete the work contemplated by the Contract. Wherever reference specifications or publications are specified, comply with the issue or edition (including interim AASHTO specifications and ASTM tentative designations) in effect on the date proposals are submitted, unless the date or year is indicated or specified. If there is a conflict between a cited title and a cited number, the title will take precedence over the section number.

Anything mentioned in the Specifications or Special Provisions and not shown on the drawings or shown on the drawings and not mentioned in the Specifications or Special Provisions will be like effect as if shown or mentioned in both. In case of difference between drawings and Supplemental Specifications or Special Provisions, the Supplemental Specifications or Special Provisions will govern.

5.5 RESPONSIBILITY OF CONTRACTOR —

(a) General. Keep direct control of the Contract and see that the work is properly supervised and is performed satisfactorily and efficiently. Supervise the work personally or appoint a competent superintendent or representative to be on the project at all times. Give this superintendent or representative the authority to receive orders and directions; to execute orders and directions without delay; and to make arrangements for all necessary material, equipment, and labor.

Keep on the project, at all times, a copy of the plans, a copy of the specifications, and a copy of the Contract.

The Commission is not responsible for the Contractor's satisfactory completion of the contract work as a consequence of the presence of Commission representatives or inspectors and their inspection.

(b) Gratuities and Penalties. Do not give or offer, or allow agents, employees, or representatives to give or offer, either directly or indirectly, money, property, entertainment, or other valuable things, to any

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employee or representative of the Commission for any reason, purpose, or cause, or as an inducement, bribe, or reward for doing or omitting to do any act, or for showing any favor or disfavor in relation to any matter relating to the contract. Any such action will constitute a violation of the contract. Upon satisfactory proof to the Commission of such violation, the Commission may terminate performance of the work and take steps to complete the project.

5.6 PUBLIC OR PRIVATE FACILITIES AND STRUCTURES ON THE PROJECT —

(a) Utility Infrastructure and Utility Adjustments Interfering with Contract Operations. The Commission/Others will be providing utility infrastructure to the Tolling Zones. The contractor will need to coordinate the installation/locations of their design with the Commission/Others.

The contractor will also need to coordinate with the Commission/Others when making electrical or other connections to the utility building.

Refer to the provisions of Act 287-1974, as amended by Act 187-1996, which specifies project responsibilities in regard to public health and safety during excavation and demolition operations in areas of underground utilities.

(b) Delays in the Performance of Work. No additional compensation will be paid because of an impact to the contract work from Utility Infrastructure and Utility Adjustments unless the Contractor establishes, to the satisfaction of the Commission, that the impact was unforeseen and unforeseeable by a reasonable contractor; that losses could not have been avoided by the judicious handling of forces, equipment and plants, or by reasonable revisions to the schedule of operations; and that the impact has resulted in a documented increase in the cost of performing the contract work, in which case only delay damages will be paid.

(c) Damage to Utility Infrastructure. Compensate the owner for all cost of repairing, replacing, or resetting any facility or structure damaged or disturbed by performance of the Work under this Contract.

5.7 COOPERATION BETWEEN CONTRACTORS — The Commission reserves the right to contract for and perform other work on or near the work covered by the Contract.

If separate contracts are awarded within the limits of, or adjacent to, any one project, conduct the work to avoid interfering with or hindering the progress or completion of the work being performed by other contractors. As directed, cooperate with contractors working on the same project. Satisfactorily join work with and in proper sequence with the work of others.

Assume all liability in connection with the Contract. Protect and save harmless the Commission from all damages or claims that may arise because of inconvenience, delay, or loss experienced because of the presence and operations of other contractors working within or outside the same project limits.

Contractors working on either the same or adjacent projects are to cooperate with each other as part of their own scope of work and as directed. Without in any way limiting the foregoing requirement, cooperate and coordinate to the extent necessary to satisfactorily conclude all work essential for the operation of the Turnpike. The comfort and safety of the Turnpike customer is of paramount importance for the good of the Turnpike. The Commission reserves the right to alter or otherwise adjust the quantity of work items to be performed in this area. Include all considerations, financial and otherwise, resulting from this requirement herein to interface, coordinate, and cooperate with other contractors working the same or other areas, as well as with the Commission and its authorized representative.

Arrange the work and place and dispose of the materials being used so as not to interfere with the operations of the other contractors within the limits of, or adjacent to the project.

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If any part of the work depends on proper execution or results upon the work of any other contractor, within two (2) working days of the start of the work, inspect the work of the other contractors and report in writing to the Commission any apparent discrepancies, interferences, defects, or delays in such work that render it unsuitable for such proper execution and results. Failure to so inspect and report will constitute an acceptance of the other contractor's work as fit and proper to receive this work, except as to defects which may develop in the other contractor's work after the execution of the work hereunder.

Whenever conflict between necessary working operations exists, the Representative will be the sole and final authority for determining priorities relative to schedule and work to be performed. The decision of the Commission will be final and binding on all concerned and work will be performed as directed at no additional costs to the Commission for the alteration and adjustment of schedule and work item quantities.

If any contractor does not complete the various portions of the work in general harmony, and another contractor is caused damage or injury by the failure to so act in harmony, the contractor damaged or injured is to settle with the contractor causing the damage or injury by agreement or arbitrate such claim or disputes. The Commission, however, is not liable to any contractor for any increased costs or damages resulting from the defective work, interference, final construction decisions, failure to coordinate and cooperate, or delays of other contractors.

5.8 CONSTRUCTION SURVEYING — The Commission/Other will provide topographic mapping, digital terrain models, and mapping technical data for the tolling zones.

Survey related to the installation of the gantry and gantry foundations will be performed by the Commission/Others.

Any surveying shall be by a qualified surveyor, registered in the State, to perform all necessary work relative to and required for proper construction.

The Commission reserves the right to check the Contractor's engineering and surveying work at any time during the course of the project. Survey notes and notebooks pertinent to the construction of the project will become the property of the Commission upon the completion of the work.

Be responsible for the preservation of all survey points, line, grade and elevation existing or required for construction. Re-establishment of permanent references destroyed by the Contractor's operations is the responsibility of the Contractor. Re-establishment of such permanent references will be to the satisfaction of the Commission, and copies of all survey notes relative to such work will be furnished to the Commission before the completion of the project.

Unauthorized deviation from controls for required construction will not be the basis for claim for additional compensation.

Payment for this work will be considered incidental.

5.9 INSPECTION OF WORK — The work will be subject to the inspection of the Commission or authorized representatives. Provide them access to the work and furnish them with every reasonable facility for determining whether the work being performed or which has been completed is in accordance with the requirements of the plans, specifications, and contract, except as otherwise provided. Provide all labor and equipment necessary for such examination.

5.10 DEFECTIVE WORK AND MATERIAL — If any work and/or material does not meet the requirements of the plans and specifications, or is not within reasonably close conformity as determined by the Commission, such work and/or material will be declared defective.

Unless otherwise specified, remove and replace or repair, as directed, work damaged by any causes during construction, at no expense to the Commission.

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5.11 MAINTENANCE OF PERFORMED WORK — Maintain the performed work during construction and until the date of physical work completion at no additional cost to the Commission.

Provide continuous and effective work with adequate equipment and forces to keep roadway, structures, facilities and equipment in satisfactory condition at all times.

If at any time, performed work is not maintained, the Commission reserves the right to enter upon the project and perform such work considered necessary for employee safety, facility operations and traffic accommodation and to deduct the cost thereof from any money due or to become due.

The Contractor is specifically required to maintain completed portions of work until acceptance by the Commission. Conduct operations in such a manner as will prevent damage to completed work.

Repair of completed work damaged as a result of Turnpike or traffic accidents will be the responsibility of the Commission. Repairs of completed work damaged from any other cause or by the Contractor's equipment or operation will be the responsibility of the Contractor.

SECTION 6 — CONTROL OF MATERIAL

6.1 GENERAL — Use material complying with the requirements of these specifications.

Refer to the provisions of Act 226 - 1968, concerning the purchase of aluminum and steel products produced in a foreign country.

In accordance with the provisions of Act 3 - 1978, as amended by the Act 161 1982, and the Act 144-1984, use or furnish only steel products produced in the United States in the performance of the contract or any subcontract.

Following Notice to Proceed, furnish to the Commission a complete statement of the project construction material's origin, composition, and manufacture.

With each shipment of steel products delivered to the project site, provide the Inspector-in-Charge the following:

- For unidentified steel products, documentation such as invoices, bills of lading, and mill certification that the steel was melted and manufactured in the United States.
- For a steel product identifiable from its face, certification that Section 4 of the Act has been complied with.
- For fabricated steel delivered to the project site, furnish copies of mill orders and shipping statements, as directed. Show the weights of the individual members on the statement, if directed. Assure that the fabricator presents the Commission's shop inspector with a copy of the shipping invoice to be stamped for verification of inspection and approval of steel items before shipment. Forward the stamped copy with the shipment for the project file. Mill certifications will be reviewed, approved and returned to the fabricator by the shop inspector. Department Form CS-4171, Certificate of Compliance, is required for all shipments of fabricated structural steel.

The provisions of this act will not be waived unless the Commission has determined, under authority granted in Section 4(b) of the act, that a certain steel product or products is not produced in the United States in sufficient quantities to meet contract requirements. Such a determination will be set forth in the proposal, or in an addendum to the proposal.

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Steel products are defined as products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated, otherwise similarly processed, or processed by a combination of two or more of these operations from steel made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer, or any other steel-producing process. Included are cast iron products and machinery and equipment as listed in United States Department of Commerce Standard Industrial Classification 25, 35, and 37 and made of, fabricated from, or containing steel components. If a product, as delivered to the project, contains both foreign and United States steel, such product is considered to be a United States steel product only if at least 75% of the cost of the articles, materials, and supplies have been mined, produced, or manufactured, as the case may be, in the United States.

No payment will be made on the contract when unidentified steel products are supplied, until the hereinbefore requirements are met.

Any payments made that should not have been made may be recoverable from a manufacturer or supplier as well as from a contractor or subcontractor.

Any person who willfully violates the Act will be prohibited from submitting proposals for any contract for a period of five (5) years from the date of determination that a violation has occurred. In the event the person who violates the provisions of Section 4(A) is a subcontractor, manufacturer or supplier; such person will be prohibited from performing any work or supplying any materials to the Commission for a period of five (5) years from the date of determination that a violation has occurred.

If steel products are used as a construction tool and will not serve a permanent functional use in the project, compliance with Act 3 - 1978, as amended by the Act 161- 1982, and the Act 144-1984, is not required.

When standard manufactured items are specified and these items are identified by gage, unit weight, section dimensions, or similar characteristics, their identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by specified tolerances, industry established manufacturing tolerances will be accepted.

The term "gage," when used in connection with the measurement of metal, plates, sheets, or wire, will be applied as follows:

- **Uncoated Plates or Sheets** — U.S. Standard Galvanized Plates or Sheets — AASHTO-M167 or M218. Aluminum Sheets — AASHTO-M197
- **Steel Wire** — AASHTO-M32

The Contractor's statement of the origin, composition and manufacture of materials to be used in construction of the project is to be submitted on the Contractor's Material Source Statement.

In addition to those instances when the use of domestic materials is required by law, preference will be given to the use of domestic materials. Non-domestic construction materials will not be used without the prior consent of the Representative.

6.2 MATERIAL —

(a) Preliminary Acceptance. Have the source of material supply accepted before delivery is started. When indicated or directed, submit representative preliminary samples of the material. Submit samples of the kind and quality specified, for examination or test. Obtain written acceptance of the quality of the samples before obtaining material from the source of supply. Unless otherwise indicated or directed, representative samples of material requiring laboratory tests will be taken. Use such material only after

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written acceptance has been received from the Commission, and only so long as the material complies with the requirements. If material from a previously accepted source of supply does not produce specified products, furnish material from other acceptable sources.

(b) Inspection. Inspect material and store only that material meeting specification requirements for project use. Do not unload questionable material, until accepted by the Commission. Do not incorporate with other material previously accepted. When the grading and the quality of the material delivered to the project does not conform to the grading or quality as inspected and tested, the Commission reserves the right to reject the material at the work site. As required, furnish necessary assistance to the inspector in obtaining samples.

Allow designated Commission representatives to inspect material being used, or intended to be used, at any time before, during, or after material preparation, while being used during the progress of the work, or after the work has been completed. Furnish or arrange with producers or manufacturers to provide necessary material, labor, tools, and equipment for such inspection.

Inspections and tests, if made at any point other than the point of incorporation in the work, will not guarantee acceptance of the material. Inspection and testing performed by the Commission will not relieve the Contractor's responsibility for quality control.

(c) Standard of Quality. Wherever in these specifications an article or material is defined by describing a proprietary product or by using a trade name of the manufacturer or vendor, the term "or approved equal", if not inserted, is implied and assumed in all cases as signifying that the specifications will be interpreted liberally. Accordingly, it is to be understood that any reference to a particular manufacturer's product either by name or by limiting description has been made solely for the purpose of more clearly indicating the minimum standard of quality desired, and any other make substantially similar and performing as effectively the duties imposed by the general design will be approved as equal and satisfactory.

6.3 TESTS AND ACCEPTANCE OF CONSTRUCTION MATERIAL —

(a) Responsibility. Material will be accepted on the basis of inspection, testing or certification, as directed.

Make or have made tests of samples of material, unless otherwise designated, in accordance with methods described in the specifications or, if the required method is not described, make the tests in accordance with Standards and/or Tentatives of ASTM, or other testing procedures adopted by the Commission.

Provide the necessary personnel to assist in collecting and transporting samples to the site of the test for the verification of the accuracy of scales, measures and testing equipment.

(b) QC. Maintain a QC system that provides reasonable assurance that material, products and completed construction submitted for acceptance conform to contract requirements whether self-manufactured, processed or procured from subcontractors or vendors. When specified, submit for review a plan of the QC system to be used. Perform or have performed the inspections and tests required to substantiate product conformance to contract requirements. Perform or have performed all inspections and tests and make them available for review throughout the contract life. Procedures will be subject to review of the Commission before the work is started. Charts and records documenting the quality control inspections and tests will become the property of the Commission upon completion of the work.

(c) Certification. When specified, submit dated certification.

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Unless otherwise directed, retain the original, signed certification at the manufacturer's, fabricator's, or producer's location. Send a copy of the original certification to the project with each shipment. Do not incorporate any material in the work, unless approved by the Commission, until a properly completed certification arrives on the project.

Notify the manufacturer, fabricator, or producer of these requirements. Accept responsibility for all certifications for all materials arriving at the project site. Materials delivered to the project site that are of questionable quality may be sampled, tested, and approved by the Commission before incorporation in any work. Random quality assurance samples may be selected by the Representative from the material delivered to the project site or at the place of supply before delivery.

6.4 STORAGE OF MATERIAL — Store material to assure preservation of specified quality and fitness for the work.

Stored material, even though accepted before storage, may again be inspected before use in the work. Locate stored material to facilitate prompt inspection and control.

Do not use private property for storage purposes without written permission of the owner or lessee. Make copies of this permission available to the Commission. Restore storage sites to conditions acceptable to property owners and the Commission.

Allocation of areas on the right-of-way for equipment and material storage will be made by the Representative. Any additional area required is to be obtained off I-80 property by the Contractor at his own expense. Prepare the area designated for equipment and material storage, and upon completion of the contract, restore the site to its original condition.

6.5 UNACCEPTABLE MATERIAL — Material not conforming to the requirements of the specifications, whether in place or not, will be rejected. Remove such material promptly from the site of the work, unless otherwise directed. Do not return rejected material to the work site until defects have been corrected and the material has been accepted for use.

6.6 COMMISSION FURNISHED MATERIAL — The Commission will furnish certain materials, to the Contractor, in the quantities required. Material will be delivered or made available to the Contractor.

After delivery and acceptance by the Contractor, the cost of replacing material due to shortages, deficiencies, or damage, including demurrage charges, will be deducted from money due or to become due.

6.7 PENNSYLVANIA TRADE PRACTICES ACT —

(a) General. Pursuant to the Pa. Trade Practices Act, Act 226-1968, the Commission will not specify, purchase, or permit to be furnished or used in any contract aluminum or steel products as set forth below made in the countries set forth below.

The Commission may utilize the discretionary waiver provision of Act 3-1978 as to steel products. As to aluminum products, if the sole source is from a banned country relief may be permitted under the Statutory Construction Act, 1 Pa. C.S. 1901 et seq.

1. Brazil: Welded carbon steel pipes and tubes; carbon steel wire rod; tool steel; certain stainless steel products including hot-rolled stainless steel bar; stainless steel wire rod and cold-formed stainless steel bar; pre-stressed concrete steel wire strand; hot-rolled carbon steel plate in coil; hot-rolled carbon steel sheet and cold-rolled carbon steel sheet.

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2. Spain: Certain stainless steel products, including stainless steel wire rod, hot-rolled stainless steel bars and cold-formed stainless steel bars; pre-stressed concrete steel wire strand; certain steel products including hot-rolled steel plate, cold-rolled carbon steel plate, carbon steel structural shapes, galvanized carbon steel sheet, hot-rolled carbon steel bars and cold-formed carbon steel bars.

3. South Korea: Welded carbon steel pipes and tubes; hot-rolled carbon steel plate; hot-rolled carbon steel sheet and galvanized steel sheet.

4. Argentina: Carbon steel wire rod and cold-rolled carbon steel sheet.

SECTION 7 — LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

7.1 LAWS TO BE OBSERVED — At all times, observe and comply with the following, and post as required: all Federal, State, and local laws, ordinances, and regulations which affect the conduct of the work or which apply to employees on the project; all orders or decrees which have been or may be enacted by any legal bodies or tribunals having authority or jurisdiction over the work, material, employees, or contract. Protect and indemnify the Commission and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, including violations by contractor employees.

7.2 PERMITS, LICENSES, AND TAX RESPONSIBILITY —

(a) **Permits and Licenses.** Purchase and submit copies of permits and licenses. At the job site, post notices necessary for the proper and lawful performance of the work, in accordance with such permits and licenses.

(b) **Tax Responsibility.** Ascertain the possible existence, scope and coverage of any local subdivision tax, sometimes called an occupation tax, wage tax, income tax, franchise tax, or excise tax on the construction operations within the limit of the political subdivision imposing such tax. Also indemnify and save harmless the Commission and its agents from liability for the collection and payment of any taxes assessed and levied by the constituted authority, including upon Contractor agents, employees, and/or representatives in connection with the performance of work on the project.

(c) **Vehicle Registration.** Attention is directed to 75 P.S. 1302(a) and 1303(a), (b), which requires vehicles to be registered in Pennsylvania when used on a project which is being built under traffic or where the vehicles are operated on a public highway opened to traffic.

(d) **Sales Tax.** Contact the Pennsylvania Department of Revenue or the Internal Revenue Service to determine the applicability of taxes. Relevant exemption numbers and certificates are available on request.

7.3 PATENTED DEVICES, MATERIAL, AND PROCESSES — If any design, device, material, or process covered by letters of patent or copyright is used, provide for use by suitable legal agreement with the patentee or owner. Indemnify and save harmless the Commission from any claims for infringement, by reason of the use of any patented design, device, material, process, or any trademark or copyright, and indemnify the Commission for any costs, expenses, and damages which it may be obliged to pay by reason of any infringement, at any time during the performance or after the completion of the work. These provisions also apply to the surety.

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7.4 SANITARY PROVISIONS — Provide and maintain, in a neat and clean condition, sanitary facilities for the exclusive use of personnel on the project. Dispose of all wastes, both sewage and wastewater, in a manner approved by the DEP. As required, obtain permits from local municipalities to install temporary toilet facilities.

7.5 OCCUPATIONAL SAFETY AND HEALTH — Comply at all times with applicable Federal, State, and local laws, provisions, and policies governing safety and health, including the Federal Construction Safety Act (Public Law 91-54), Federal Register, Chapter XVII, Part 1926 of Title 29 Code of Federal Regulations, Occupational Safety and Health Regulations for Construction, and subsequent publications updating these regulations. In addition, all crane operators must be certified to operate the specific crane in use on the project. They must be in possession of a current CCO license (Certified Crane Operator) valid for the type of crane intended to be used.

Take any other needed action or proceed as directed, to protect the life, health, and general occupational welfare of personnel employed on the project.

If, in the Representative's opinion, employees are exposed to extraordinary conditions which could or do constitute a hazard, modify such equipment, devices, and job procedures to insure protection against the hazard or to reduce the risk to the employees engaged in project work.

All areas of a project will be hard hat areas. Require all persons within the project limits to wear protective headgear, including persons in cement concrete and bituminous concrete plants operated exclusively for a project, even though the plant(s) may be remotely located.

Submit a written project safety program for Commission review. Give special emphasis to providing safeguards for any specially or unusually hazardous operations and health hazards. Include initial indoctrination and continuing instructions for all employees to enable them to perform work in a safe manner. Include in the instruction project safety practices, manner of reporting accidents, availability of medical facilities, and explanation of individual responsibility for accident-free operations.

Immediately take corrective action, upon notification by the Representative of any noncompliance with the provisions of this section. Upon receipt of this notice, failure or refusal to promptly comply will cause a written order to be issued, stopping all or part of the work until the corrective action has been taken. Claim for an extension of time, costs, or damages because of the time lost due to any such stop orders will not be considered.

Require all persons to wear ANSI/ISEA certified high-visibility safety vests or jackets with reflective stripes when working within the Commission's right-of-way or while in work zones adjacent to traffic.

7.6 CARE OF PUBLIC AND PRIVATE PROPERTY — Do not damage overhead and underground facilities and structures or property within or adjacent to the project. Use special care in the performance of the work in order to avoid interference or damage to operating utilities or plants; however, where there is any possibility of interference or damage, make satisfactory arrangements with responsible corporate officers of the utilities or plant, covering the necessary precautions to be used during the performance of the work. Make these arrangements, subject to review, before work is started.

Protect all land monuments and property markers which are to be affected by the construction until they have been correctly referenced by the Commission. Beyond the construction area, reset monuments and markers which are disturbed by contract operations, either during the construction of the project or otherwise, when and as directed.

Promptly make restitution for or satisfactorily repair or restore damaged public or private property. Protect trees to be left standing. If these existing trees to be left standing are damaged, satisfactorily repair

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or replace them, at no expense to the Commission, or compensate the Commission for the damage by an equitable monetary amount as determined by, or agreed with, the Commission.

7.7 INDEMNITY — Assume the entire responsibility and liability for any damage or injury of any kind or nature whatever (including death resulting therefrom) to all persons, whether employees of the Contractor or otherwise, and to all property caused by, resulting from, arising out of or occurring in connection with the execution of the work of the Contractor, and if any claims for such damage or injury (including death resulting therefrom) be made or asserted, whether or not such claims are based upon the alleged active or passive negligence of participation in the wrong of the Commission, its Commissioners, agents, servants and/or employees (herein collectively the "Commission") or upon any alleged breach of any statutory duty or obligation on the part of the Commission; the Contractor agrees to indemnify and hold harmless the Commission from and against any and all such claims, loss, costs, expense, liability, damage or injury, including legal fees, interest, penalties and disbursements that the Commission may directly or indirectly sustain, suffer or incur as a result thereof, and the Contractor assumes, on behalf of the Commission, the defense of any action at law or in equity which may be brought against the Commission arising by reason of such claims and will further pay on behalf of the Commission upon demand, the amount of any judgment that may be entered against the Commission, individually, jointly or severally in any such action.

In the event that any such claim, loss, cost, expense, liability, damage or injury arises or is made, asserted or threatened against the Commission, its Commissioners, officers, agents, servants or employees, the Commission only will have the right to withhold from any payments due or to become due to the Contractor an amount sufficient in the Commission's judgment to protect and indemnify it, its Commissioners, officers, agents, servants and employees, from and against any and all such claims, loss, cost, expense, liability, damage or injury, including legal fees and disbursements, or the Commission only in its discretion, may require the Contractor to furnish a surety bond satisfactory to the Commission guaranteeing such protection which bond will be furnished by the Contractor within five (5) days after written demand has been made therefor. In the event performance of the terms of this paragraph by the Contractor requires the retention of legal counsel on behalf of the Commission, the selection of such legal counsel by the Contractor will be subject to the approval of the Commission, such approval not to be unreasonably withheld by the Commission. In the event the Commission is required to take legal action to enforce the terms of this Paragraph, Contractor is responsible for the Commission's cost of collection including attorney's fees.

7.8 CONTRACTOR'S RESPONSIBILITY FOR WORK —

(a) Responsibility for Performed Work. The terms and conditions of the Contract will be in effect until the work is completed and accepted by the Commission. However, the Contractor will be relieved of responsibility for further physical work, maintenance, (with the exception of post construction preventative, warranted or corrective maintenance) and third party liability on the date of physical work completion as established during the final inspection. The Commission's acceptance of the project does not relieve the Contractor and surety from continuing liability for latent defects, as specified.

(b) Responsibility for Latent Defects. The Representative will determine if a defect is a latent defect. The Contractor and his surety will continue to be liable for all latent defects. However, the surety is liable only until the performance bond is released. Satisfactorily repair or correct latent defects, at no expense to the Commission. If the defects cannot be satisfactorily repaired or corrected, provide reimbursement for any expenses or damages incurred by the Commission because of the defects.

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(c) Responsibility During Temporary Suspension of Work. Should the work be temporarily suspended, wholly or in part, written notification will be given of the suspension and the reason(s) for the suspension.

If the work is temporarily suspended, wholly or in part, due to the fault of the Contractor, the Required Completion Date and any specified Milestone Date(s) will not be changed, unless otherwise directed by the Representative.

After a whole or partial suspension, upon receipt of written notice from the Representative, actively resume work according to the detailed schedule of operations.

(d) Specified Suspension of Work. The Commission reserves the right to suspend work, wholly or in part, and on a temporary basis, to accommodate the customers, traffic requirements and maintenance operations. The extent of such specified suspension of work will be included within the Special Provisions for the project. Responsibility for maintenance of the facility and its repair during such periods of specified suspension of work will be the responsibility of PennDOT and the Commission.

The Contractor is not responsible for winter maintenance activities which include snow removal and the application of deicing chemicals or anti-skid materials.

7.9 CONTRACTOR'S RESPONSIBILITY FOR PUBLIC OR PRIVATE FACILITIES AND STRUCTURES — Cooperate with others in the performance of corrective project work.

The Commission will cooperate in the issue of notices and will participate in all essential field conferences relating to the facilities and structures.

7.10 PERSONAL LIABILITY OF PUBLIC OFFICIALS — In carrying out any of the provisions of these specifications or in exercising any power or authority granted to them by or within the scope of the contract, no liability may be placed upon the Commissioners, Chief Executive Officer, Engineer, Commission Representatives, other officers or their authorized representatives, either personally or as officials of the Commission. In such matters, they act solely as Commission agents and representatives.

7.11 NO WAIVER OF LEGAL RIGHTS — The Commission, the Chief Executive Officer, the Commission representative other officers, or the Representative will not be prevented by an erroneous

- measurement,
- computation,
- estimate, or
- certificate

made or given by them or any agent or employee of the Commission, under any provision or provisions of the contract at any time, either before or after the completion and acceptance of, and payment for the project, from showing at any time that any

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- computation,
- estimate, or
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is untrue or incorrectly made in any particular or that the work or material or any part does not conform to the specifications and contract.

The Commission will have the right to reject the whole or any part of the work or material, should any

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- certificate, or
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be discovered or be known to be inconsistent with the contract terms or otherwise improperly given. The Commission will not be prevented, notwithstanding any

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- computation,
- estimate,
- certificate, or
- payment

from demanding and recovering from the Contractor or surety, such damages as it may sustain by the failure to comply with the terms of the specifications and contract or on account of any overpayment(s) made on any estimate or certificate.

Neither the payment on any estimate or certificate signed by the Commission nor any extension or remission of contract time nor any possession taken by the Commission or its employees, will operate as a waiver of any portion of the contractor of any power herein reserved by the Commission or any right to damages herein provided, nor will any waiver of any breach of contract held to be a waiver of other or subsequent breach.

The terms of this contract will not be waived or modified by any verbal communication between the Contractor and Commission personnel.

7.12 MINIMUM WAGE SPECIFICATIONS AND RATES —

(a) Requirements. According to the provisions of the Pennsylvania Prevailing Wage Act 43 P.S. 165-1, and the implementing Regulations of the Pennsylvania Department of Labor and Industry, comply with the prevailing minimum wage predetermination requirements, as specified in the proposal, specifications, and contract.

(b) Responsibility for Payment of Wages. Accept responsibility for all wages paid or due to any employees engaged upon the project under contract, as mandated by the Pennsylvania Prevailing Wage Act, various applicable Federal acts, and the contract. Do not attempt to pass such responsibility elsewhere. Do not require employees to refund, directly or indirectly, any part of such wage(s). Where classification, reclassification, or additional classifications of workmen are made in accordance with the Pennsylvania Prevailing Wage Act and its regulations, make no claim against the Commission for additional compensation for such classification, reclassification, or additional classification.

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If after a contract has been awarded, it is decided, because of unforeseen construction development, to list an additional classification and wage rate, the Commission, with or without application by the Contractor, will make written request for a wage determination by the Secretary of Labor and Industry.

No person may be employed on the project under contract, except in accordance with the classification set forth in the decision of the Secretary of Labor and Industry.

(c) **Certification and Payment of Rate of Wage.** According to the provisions of the Pennsylvania Prevailing Wage Act and various applicable Federal acts, including their implementing regulations, file with the Commission a weekly statement and a final statement at the conclusion of project work under contract, certifying that all employees have been paid wages in conformity with the provisions of the contract, as prescribed by the regulations of the Pennsylvania Department of Labor and Industry, implementing the Pennsylvania Prevailing Wage Act. If any wages remain unpaid, list on the statement the amount of wages due to each employee. Certify that, directly or indirectly, no refunds are received from any employee of any such minimum wage(s), other than deductions authorized by the Pennsylvania Wage Payment and Collection Law, 43 P.S. 260.1. Use forms furnished by the Commission and submit the forms to the Representative within 7 days after the regular payment date of the payroll period. Payment of the current and final estimates will be withheld if such certification is not submitted, using the proper form, within the prescribed time limit.

(d) **Posting.** Post a notice(s) in the manner and form prescribed by the current regulations of the State Department of Labor and Industry. This notice is to be clearly legible and to be placed in a prominent and easily accessible place at the project site under contract, as well as at places where employees are paid their wages.

(e) **Records and Inspection.** Keep accurate records of employment and wage payments, including all the information required by the regulations of the State Department of Labor and Industry implementing the State Prevailing Wage Act, as amended. Keep time cards of employees, as required by the cited regulations and act. In addition, keep the original signed indentures for each apprentice and the approvals of the Pennsylvania Apprenticeship and Training Council. Preserve the records for 2 years from the date of payment and keep open at all reasonable hours, for inspection by the Commission and by the State Secretary of Labor and Industry. Make these records easily accessible within a period of 7 days from the date on which the State Secretary of Labor and Industry requests in writing that such records be made available. For the purpose of such inspection, furnish the authorized inspectors of the Commission every assistance in determining the wages paid in compliance with the regulations.

(f) **Penalties.** Failure to comply with the Pennsylvania Prevailing Wage Act and its regulations will result in withholding money due or to become due on the project contract. It will also result in termination of the right to proceed with the project work under contract and/or other penalties prescribed by law.

7.13 HAULING RESTRICTIONS —

(a) **General.** Accept responsibility for all hauling done on the project and on adjacent highways, in connection with the contract. Hauling restrictions on highways will be according to the applicable sections of the Pennsylvania Vehicle Code, Act of 1976, No. 81.

Without written permission, do not move and/or operate heavy-duty construction grading and hauling equipment over existing or new pavements, subbase, base and surface courses, and structures which will remain in service.

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Special permits may be required for the transfer of oversize or overweight equipment or vehicles from one work area to another work area within the project limits. Correct any damage caused by the transfer of equipment or vehicles.

If, in special cases, further restrictions are necessary, such restrictions will be indicated and/or specified in the proposal.

Hauling restrictions on the Turnpike System will also be governed by appropriate Commission rules and regulations.

(b) Weight Limits and Weighing.

1. Do not operate on public highways any vehicles which are in excess of the registered, gross and/or axle weight limits established in Chapter 49 of the Vehicle Code, 75 PA. C.S. Chapter 49, or as posted by the Department.

2. Submit to weighing by Department weigh teams when requested. If, as a result of such a weighing, it is determined that a vehicle owned or leased by the Contractor or any Subcontractor has been operated on public highways carrying a weight in excess of the above registered, gross or axle weight limits, the sum of \$50 for each 500 pounds or part thereof of such excess weight will be deducted as liquidated damages from money due or to become due. These liquidated damages are attributable to inherent damage to the highway which is not readily ascertainable and do not relieve the Contractor of responsibility to pay ascertainable damage as may be required in other sections of these Specifications.

7.14 DISCRIMINATION ON ACCOUNT OF RACE, COLOR, RELIGIOUS CREED, ANCESTRY, SEX, AGE OR NATIONAL ORIGIN PROHIBITED IN CONNECTION WITH EMPLOYMENT—

(a) General. Do not discriminate against any individual, who is qualified and available to perform the work to which the employment relates, by reason of race, color, religious creed, ancestry, sex, age or national origin.

(b) Penalties. Failure to comply with the above provisions, prescribed in greater detail in 15 P.S. 7306, and modified by Pennsylvania Human Relations Act 43 P.S. 951, may result in the deduction of money due or to become due for each violation. A second or subsequent violation will result in cancellation or termination of the contract upon which the violation occurred, and forfeiture of all money due or to become due, and other penalties prescribed by law.

7.15 SELECTION OF LABORERS AND MECHANICS — In employment on public works, Provisions of 51 P.S. 492.1 require a preferential rating, similar to that given to State employees, to any soldier making application for employment and on intended discharge for reduction in force. The word "soldier", as used in the cited act, means a person who served in the armed forces of the United States or in any official women's organization, during any war or armed conflict in which the United States was engaged, and who has an honorable discharge from such service.

7.16 WATERWAY REGULATIONS AND WATER POLLUTION CONTROL —

(a) Waterway Regulations. Conduct indicated work in waterways, flood plains or their hydrologically connected wetlands in accordance with the requirements of permits or approvals issued by the U.S. Army Corps of Engineers, the U.S. Coast Guard, the DEP, the DCNR and/or the Pennsylvania

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Fish and Boat Commission, whichever is applicable. Do not conduct work, including borrowing or wasting material other than indicated, in waterways, floodplains or their hydrologically connected wetlands before obtaining the required permits or approvals.

(b) Water Pollution Control. Comply with all applicable State and Federal laws and regulations preventing the pollution of surface water and ground water resources.

(c) Act 247. In accordance with Act 247, enacted by the General Assembly of the Commonwealth of Pennsylvania and approved by the Governor on October 26, 1972, ascertain the current statutes, rules, and regulations concerning anti-pollution measures. Include in the proposal price all costs of complying with the terms of the statutes, rules, and regulations. No separate or additional payment will be made for such compliance. In the event that the statutes, rules, and regulations are amended, or if new statutes, rules, or regulations become effective, perform all additional and/or extra work deemed necessary, as ordered in writing and directed by the Representative, in accordance with Section 109.03.

Determine what local ordinances, if any, will affect the project work. Check for any county, city, borough, or township rules or regulations applicable to the area in which the Project is being constructed, and, in addition, for any rules or regulations of other organizations having jurisdiction, such as chambers-of-commerce, planning commissions, industries, or utility companies who have jurisdiction over lands which the project occupies. Include any costs of compliance with local controls in the prices proposal, even though documents of such local controlling agencies are not listed herein. No separate or additional payments will be made for complying with existing, amended or new local ordinances, directives, or controls.

7.17 THIRD-PARTY LIABILITY - Contracts covered by these specifications are not to be construed for the benefit of any person or political subdivision not a party to this Contract, nor will this Contract be construed to authorize any person or political subdivision not a party to this contract to maintain a lawsuit on or under this Contract.

7.18 CONTRACTOR'S INSURANCE —

(a) General. Do not commence work under the Contract until all insurance, and insurers, under this section have been obtained and approved by the Commission.

Before or at the execution of a contract, provide the Commission with certificates of insurance evidencing the coverage required.

Have all primary and excess liability policies contain the following clause:

"Thirty (30) days written notice of any cancellation, non-renewal, limit or coverage reduction is to be sent to the Commission by Certified Mail."

The preceding is subject to existing Commonwealth of Pennsylvania statutory cancellation provisions relating to non-payment of premium and misrepresentation by the insured.

Maintain the insurance described herein until the work is completed and a Final Certificate of Completion has been issued.

All insurance policies must be written by an Insurance Company licensed and authorized to do business in Pennsylvania and acceptable to the Commission. Have all insurance policies and certificates signed by a resident Pennsylvania Agent of the issuing Company. However, in the case of an eligible surplus lines insurer, have all policies and certificates also signed by a party duly authorized to bind, on behalf of the eligible surplus lines insurer, the certified coverages.

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(b) Worker's Compensation and Employer's Liability Insurance. Take out, pay for and maintain during the life of the Contract, Worker's Compensation Insurance in statutory required limits for the protection of all employees. Provide, pay for and maintain during the life of the Contract, Coverage B, Employer's Liability Insurance in limits of not less than \$500,000 bodily injury each accident, \$500,000 bodily injury by disease, and \$500,000 bodily injury by disease each employee.

(c) Commercial General Liability Insurance. Includes: Products/Completed Operations; Blanket Contractual Liability - All Written & Oral Contracts; premises and operations liability; explosion, collapse and underground; personal injury; independent contractors; broad form property damage; severability of interests provisions; personal injury and advertising liability; premises medical payments; host liquor liability; fire damage legal liability - real property; incidental malpractice (including employees); non-owned watercraft; and automatic coverage for newly acquired entities.

The minimum required limits for the Commercial General Liability policy will be as follows:

- \$2,000,000 Each Occurrence
- \$2,000,000 Advertising and Personal Injury Limit
- \$2,000,000 General Aggregate per Location/Per Site
- \$2,000,000 Products and Completed Operations Aggregate
- \$50,000 Fire Damage Legal, Any One Fire
- \$5,000 Medical Payments

(d) Commercial Automobile Liability Insurance - covering all owned, hired, leased and non-owned vehicles with a minimum limit of liability of \$2,000,000 per occurrence.

(e) Commercial Umbrella/Excess Insurance - with the following minimum limits:

- \$5,000,000 Per Occurrence
- \$5,000,000 General Aggregate
- \$5,000,000 Products/Completed Operations Aggregate

(f) Professional Liability Insurance – with the following minimum limits:

- \$1,000,000 Per Claim
- \$3,000,000 General Aggregate

Errors & Omissions Insurance will be at a minimum aggregate limit of \$3,000,000 of liability on this project, or any combination of coverage approved by the Commission to satisfy this requirement. The coverage will be primary to all other valid and collectible insurance. The length of the extended-reporting period will be four (4) years from the completion date of the project. The coverage will be retroactive to the beginning of the inspection activities. The Contractor will be responsible for any claims resulting with their subcontractors and sub-subcontractors. Coverage may not be cancelled under any circumstances without providing the Pennsylvania Turnpike Commission sixty (60) days written notice via certified mail and the company will permit the Pennsylvania Turnpike Commission to pay the premium if the policy is cancelled for non-payment of premium. Bankruptcy or insolvency of the Contractor will not relieve the Company of its obligation under the policy. Coverage will include cost over-runs, time delays and liquidated damages associated with inspection negligence, errors, or omissions.

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(g) Owners Contractors Protective Liability Insurance – During the period of the Work, the Contractor shall obtain, pay for, maintain, and provide to the Commission an Owners Contractors Protective Liability Policy in the name of the Commission with the following limits of liability: \$1,000,000 combined single limit per occurrence for Bodily Injury and Property Damage; and \$3,000,000 in Aggregate. In lieu of the foregoing, the Commission will accept as an alternative, a project specific endorsement to the General Liability policy designating project specific aggregate limits.

(h) The Commercial General Liability and Automobile Liability policies will name the Pennsylvania Turnpike Commission, the Commonwealth of Pennsylvania, Pennsylvania Department of Transportation, Michael Baker, Jr., Inc., and the Design Engineer as an Additional Insured.

(i) Special Hazards. Requirements concerning Railroad Protective Insurance, Modification of Blasting Insurance Requirements and Insurance for other special hazards will, if required, be included in the Special Provisions.

(j) Proof of Insurance. Before commencing work, furnish to the Commission three original certificates of insurance outlining the coverages detailed above. The certificate will also indicate the Additional Insured status of the Commission and the appropriate cancellation/non-renewal notice wording.

The insurance company certificates will be in standard ACORD form and will contain the address and phone number of the insurance company or insurance agent. If appropriate, the Commission reserves the right to request certified copies of the contractor's insurance coverages.

(i) Payment. Incidental to the project.

7.19 NONDISCRIMINATION CLAUSE — During the term of this Contract, Contractor agrees as follows:

(a) Not to discriminate against any employee, applicant for employment, independent Contractor or any other person because of race, color, religious creed, ancestry, union membership, political affiliation, age, sex, sexual orientation, national origin or non-job-related handicap or disability. Take affirmative action to ensure that applicants are employed and that employees or agents are treated during employment without regard to their race, color, religious creed, ancestry, union membership, political affiliation, age, sex, sexual orientation, national origin or non-job-related handicap or disability. Such affirmative action includes, but is not limited to, the following: Employment; upgrading; demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation and selection for training. Post in conspicuous places, such as the outside of a trailer or an outside bulletin board that are available to employees, agents, applicants for employment and other persons, a notice to be provided by the Pennsylvania Turnpike Commission setting forth the provisions of this non-discrimination clause. Notices posted outside must be weatherproof.

(b) In advertisements or requests for employment placed, state all qualified applicants will receive consideration for employment without regard to race, color, religious creed, ancestry, union membership, political affiliation, age, sex, sexual orientation, national origin or non-job-related handicap or disability.

(c) Send each labor union or workers' representative with which the Contractor has a collective bargaining agreement or other contract or understanding a notice advising the labor union or workers'

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representative of its commitment to this non-discrimination clause. Similar notice is to be sent to every other source of recruitment regularly used by Contractor.

(d) It is no defense to a finding of noncompliance with this non-discrimination clause that Contractor had delegated some of its employment practices to any union, training program or other source of recruitment which prevents it from meeting its obligations. However, if evidence indicates that the Contractor was not on notice of the third-party discrimination or made a good faith effort to correct it, such factor will be considered in mitigation in determining appropriate sanctions.

(e) Where the practices of a union or of any training program or other source of recruitment will result in the exclusion of minority group persons so that Contractor will be unable to meet its obligations under this non-discrimination clause, employ and fill vacancies through other non-discriminatory employment procedures.

(f) Comply with all state and federal laws prohibiting discrimination in hiring or employment opportunities. In the event of Contractor's noncompliance with the non-discrimination clause of this Contract or with any such laws, this Contract may, after hearing and adjudication, be terminated or suspended, in whole or in part, and Contractor may be declared temporarily ineligible for further Pennsylvania Turnpike Commission contracts, and other sanctions may be imposed and remedies invoked.

(g) Upon written request, furnish all necessary employment documents and records to, and permit access to its books, records and accounts by, the Pennsylvania Turnpike Commission. If Contractor does not possess documents or records reflecting the necessary information requested, furnish such information on reporting forms supplied by the Pennsylvania Turnpike Commission.

(h) Actively recruit minority subcontractors or subcontractors with substantial minority representation among their employees. Minority subcontractor recruitment includes, but is not limited to, the Disadvantaged Business Enterprise Division, Bureau of Equal Opportunity, Pennsylvania Department of Transportation at 717-787-5891, or address correspondence to: Disadvantaged Business Enterprise Division, Bureau of Equal Opportunity, 5th Floor, Commonwealth Keystone Building, 400 North Street, Harrisburg, PA, 17120, or contact the Pennsylvania Department of General Services, Bureau of Minority & Women Business Opportunities at 717-787-7380. Address correspondence to: Pennsylvania, Department of General Services, Bureau of Minority & Women Business Opportunities 502 North Office Building, Harrisburg, PA, 17125. Also, contact the Pennsylvania Turnpike Commission, Contracts Administration Office, at 717-939-9551, Extension 4241. In addition, use the resources listed in Attachment 1.

(i) Include the provisions of this non-discrimination clause in every subcontract so that such provisions will be binding upon each subcontractor.

(j) Contractor obligations under this clause are limited to the Contractor's facilities within Pennsylvania or where the contract is for purchase of goods manufactured outside of Pennsylvania, the facilities at which such goods are actually produced.

Commission will furnish the Contractor with forms to comply with this section.

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7.20 ENVIRONMENTAL POLLUTION CONTROL — All equipment and operations are to be conducted in accord with all local, state and federal rules and regulations pertinent to the control of air, water and other environmental pollution.

Ascertain any and all restrictions regarding the work involved in this project obtain and pay for all required permits not previously obtained by the Commission and furnish the Commission copies of all such permits before the performance of any activity requiring permit.

Provide protection against pollution of streams, watercourses and wetlands during excavation, grading operations, placing or stockpiling embankment, construction of new drainage, extension and cleaning of existing drainage, utilization of staging and storage areas and other similar operations which may effect the quality of water in existing streams and watercourses, in accord with approved methods and to the satisfaction of the Representative and such agencies legally entrusted with the prevention of pollution.

Equip construction vehicles and equipment with functioning exhaust mufflers to minimize noise levels. Locate access and haul roads as far as practical from sensitive receptors including schools, churches and residences. Construct temporary noise mitigation features including constructed walls between stationary equipment and sensitive receptors as determined and required by the Commission. Where practical, locate construction trailers and/or material stockpiling areas between sensitive receptors and the construction area.

Control fugitive dust created by material hauling and grading operations by means such as wetting down roadways. The use of heavy equipment and unnecessary idling near sensitive receptors must be kept to a minimum whenever possible.

SECTION 8 — PERFORMANCE AND PROGRESS

8.1 PERFORMANCE AND PROGRESS —

(a) Preliminary Conference. Before the start of work, a preliminary conference will be held. The purpose of this conference will be to discuss the scope of the project work, to discuss all essential matters pertaining to the satisfactory project completion, and to resolve any questions regarding Contract interpretation. It is expected that the Commission should be able to provide Notice to Proceed to the Contractor shortly after the preliminary conference, once the Contractor has complied with all the requirements for bonds, insurance certificates, schedules and other similar Contract requirements.

(b) Project Scheduling. The Contractor is required to submit a fully detailed and complete schedule of operations. Schedule each operation necessary for the performance of all work separately for the Commission's review of the methods and sequences of work.

If the submitted schedule is not acceptable to the Commission, resubmit until an acceptable schedule is provided.

Submit the schedule to the Commission within ten (10) days of notice of award or at the preliminary conference, whichever occurs first. A portion of this schedule must address the maintenance and Protection of Traffic requirements as discussed in section 8.2(a).

(c) Construction Restrictions. Arrange the installation schedule to provide maximum use of the roadway during holiday periods and local events. All travel lanes must be available during holiday periods and local events. Applicable holiday periods and local events will be provided to

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the contractor soon after notice to proceed. These dates will also be furnished to the other contractors providing Maintenance of Protection of Traffic.

8.2 LIMITATION OF OPERATIONS —

(a) Maintenance & Protection of Traffic. Conduct the work in a manner and sequence that assures minimal interference with traffic. It is required that a gantry be erected in its entirety during one continuous operation. The Commission/Others will be providing Maintenance & Protection of Traffic (MPT) during the construction of the gantries at the tolling zones. The contractor will provide the Commission/Others with a schedule and work plan that highlights those work activities that will require MPT. This schedule and work plan shall include the estimated number of occurrences by type and duration at each tolling zone. For example, the type would include: total roadway stoppage or detour, roadway lane restriction, and shoulder work. This schedule and work plan will require continual updating and coordination with the Commission/Others as work progresses

The Commission/Others will be developing MPT plans following these publications:

- Temporary Traffic Control Guidelines, Publication 213
- Official Traffic Control Devices, Publication 212
- Work Zone Traffic Control, Chapter 4 of Publication 46
- Traffic Engineering and Operation Manual, Chapter 6.3, Publication 46
- Manual on Uniform Traffic Control Devices (MUTCD), 2003 Edition, with Rev 1 & 2
- PennDOT Publication 408 Section 900 and supplements

Short term operations – One lane closures will be following PATA Figure 18 and shoulder closures will be following PATA Figure 5, Publication 213. If full two lane closures are required the Commission/Others will coordinate the MPT design / detour with PennDOT.

(b) Completion of Sections of Project. Complete any designated portion or portions, as indicated or as specified in the proposal, or as directed in writing, when seasonal, local, or other conditions relating to the project or public convenience justify such action.

The Representative may relieve the Contractor of responsibility for further work on any portion of the project which has been completed before the whole if the section has been satisfactorily completed in accordance with specifications.

Release of Contractor responsibility is further contingent on the following:

- such portions have been entirely and satisfactorily completed, in accordance with the contract, and a final inspection of the section has been made.
- the Contractor's obligation under the contract to replace defective work or material is not relieved;
- the Contractor's responsibility for making further repairs to the designated sections of the project made necessary because of construction operations is not relieved; and

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- any work done by the Commission on any designated sections of the project that may have been satisfactorily completed, as provided, does not waive the rights of either party to the entire contract.

(c) Maintenance of Existing Vegetation. In order to maintain natural vegetation in all undisturbed areas, do not cross these areas with construction equipment or make any other use of these areas, except at permitted locations.

(d) Working Schedule. Schedule and execute work operations to present the least inference to traffic and complete all operations within the specified contract time.

Ascertain any and all restrictions in regard to working times which may be imposed by local, state and federal agencies.

No work may be performed without the specified traffic control and protection whether working roadway pavement or shoulders.

The Chief Executive Officer may impose restrictions on the Contractor's operations, including complete suspension to eliminate unsafe traffic conditions or congestion of the Turnpike, without liability for any delay.

8.3 CHARACTER OF WORKMEN; METHODS AND EQUIPMENT —

(a) General. Employ at all times sufficient labor and equipment for performing the work.

(b) Competence of Workers. Employ only competent and efficient superintendents, forepersons, clerks, timekeepers, equipment operators, laborers, mechanics, or artisans for every kind of work. Whenever, in the Representative's opinion, any person is unfit to perform the task, does the work contrary to instructions, or exhibits improper conduct, discharge the person immediately and do not employ the person again on the project without written permission of the Representative. Failure to remove such person, as ordered, or failure to furnish suitable and sufficient personnel for the proper completion of the work, after being ordered to correct the deficiency, may result in suspension of the work, by written notice from the Representative, until such orders are followed.

If the superintendent or representative on the project fails to cooperate with the Commission's authorized representatives in any way, the Representative will give a written order for dismissal and replacement of that superintendent or representative.

(c) Equipment. Furnish the type, condition, and quantity of equipment that meets the qualifications necessary for the proper execution of the work within the specified contract time. Maintain the equipment in good condition, subject to acceptance, before and during use in connection with the project.

If the contract specifies that construction be performed by the use of certain methods and equipment, use such methods or equipment, unless others are authorized. To use a method or type of equipment other than those specified, request authority to do so. Provide the request in writing and include a full description of the methods and equipment proposed to be used, with an explanation of the reasons for desiring to make the change. If acceptance is given, it will be on condition that construction work is performed in conformity with contract requirements. If, after trial use of the substituted methods of equipment, it is determined that the work produced does not meet contract requirements, discontinue the use of the substitute method or equipment. Complete the remaining construction with the specified methods and equipment. Remove the deficient work and replace it with work of specified quality, or take such other corrective action, as directed. No change will be made in the basis of payment for the

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construction items involved, nor in contract time, as a result of authorizing a change in methods or equipment under these provisions.

All equipment and its use on the project is subject to the approval of the Representative, and the Commission reserves the right of the Representative to require additional controls, modifications and alternate methods of operation to ensure the proper effect from the operating equipment. Equipment not capable of operations necessary to meet the approval of the Representative will be removed from the project or confined to such operations where its capabilities are considered adequate for the approval of the Representative.

8.4 LIQUIDATED DAMAGES —

For each day that any physical, system, or process work remains uncompleted or functionally distressed after the Required Completion Date, the sum per day shall be \$50,000 which, will be deducted from money due or to become due. This deduction will not be as a penalty, but as Liquidated Damages due to anticipated collected revenue lost to the Commission through uncollected tolls.

For each day that any gantries remain undelivered to the correct project site, the sum per day shall be \$10,000 which, will be deducted from money due or to become due. This deduction will not be as a penalty, but as Liquidated Damages due to anticipated collected revenue lost to the Commission through uncollected tolls.

In the event the Contractor is declared in default, Liquidated Damages will be charged as provided by this section. If the total amount chargeable as Liquidated Damages exceeds the amount payable to the Contractor or the surety, the excess is to be paid to the Commission by the Contractor or the surety.

8.5 DEFAULT AND TERMINATION OF CONTRACT — In the following paragraphs, the word "Contractor" also means the surety, in case of default, and completion of the contract by the surety.

(a) Delay, Neglect, or Default. The Contractor may be declared in default for the following reasons:

- failure to begin work within the time specified in the Notice to Proceed;
- failure to perform the work with sufficient labor, equipment, or material to insure the completion of the specified work in accordance with the contract terms;
- unsatisfactory performance of the work;
- failure or refusal to remove material, or to repair or remove and replace any work, rejected as defective or unsatisfactory;
- discontinuing work without approval;
- failure to resume work, which has been discontinued, within a reasonable time after notice to do so;
- insolvency or bankruptcy;

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- commission of any act of bankruptcy or insolvency;
- making assignment for the benefit of creditors;
- failure or refusal within 10 days after written notice by the Representative to make payment or show cause why payment should not be made, of any amounts due for material furnished, labor supplied or performed, for equipment rentals, or for utility services rendered, as covered by the Payment Bond;
- failure to protect, to repair, or to make good any damage or injury to property; and
- not performing work in an acceptable manner for any cause.

The Commission, upon written notice from the Representative or upon other proof satisfactory to the Commission, and after having given written notice to the Contractor and the surety of such delay, neglect, or default on the part of the Contractor, will have power and authority, without violating the contract to:

- declare the Contractor in default;
- take the completion of the work out of the hands of the Contractor;
- appropriate or use any or all material and equipment of the Contractor assembled for the project;
- enter into a contract or contracts for the completion of the work, according to the contract; or
- use such other methods that will be expedient for the completion of the contract in a satisfactory manner.

(b) Completion by Surety. The Commission may elect to take the performance of the work from the Contractor and may at that time notify and require the surety to complete the contract according to its terms. Also, require the surety to render within three (3) months from acceptance of the project date, but before final payment, a detailed statement of the costs of the completion of the work, including receipts and disbursements of all funds received and paid on account. However, the responsibility of the surety extends only to the limit of the bond amount.

(c) Completion by Commission Forces. The Commission may elect to take the performance of the work from the Contractor and fulfill the contract with Commission forces. At that time and in the Commission's name, the Commission may take all right, title and interest in and to the equipment and material owned by the Contractor and assembled for use in the execution of the contract, and may use them for completion.

(d) Settlement of Contract. If the contract completion by any of the methods specified results in financial loss to the Commission, the Commission may dispose of any of the remaining equipment and material taken over, without further legal process and in the manner that may be considered in the

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Commission's best interests. Any equipment or material not required for completion or recoupment of loss, or for legal charges against the contract, or any balance remaining from the disposition of material and equipment after deducting losses by the Commission, or any legal charges against the contract, will be turned over to the party legally or equitably entitled to them.

In the event the Contract is completed by Commission forces, all proper costs and legal charges incurred by the Commission in connection with the Contract will be deducted from money due or to become due to the Contractor. The Commission will credit the Contractor with the amount realized from the disposal of equipment or material.

If legal charges against the contract and the expense incurred by the Commission in connection with contract completion by any of the methods specified, less the credits herein provided for, exceed the sum which would have been payable under the contract for the completed work, the Contractor or the surety are liable to the Commission for the excess amount.

If such legal charges and expenses are less than the contract value of the completed work, the difference will be paid to the Contractor or such difference may be paid to the surety, in an amount not exceeding the total amount which has been paid by the surety on its obligations under the Performance Bond and the Payment Bond. In this event, the surety is required to furnish evidence satisfactory to the Commission that such payments have been made and that any balance remaining after payment to the surety will be paid to the Contractor.

(e) Termination Clause. The Commission may, by written notice, terminate the Contract or any portion because of any of the following conditions:

- the Contractor is prevented from proceeding with the construction contract as a direct result of a President's Executive Order with respect to the occurrence of war or in the interest of national defense;
- the Commission or the Contractor is prevented from proceeding with the construction contract as a direct result of an Order of a Court of competent jurisdiction;
- funds necessary for the project completion become unavailable;
- for the Commission's convenience, the Commission has determined that such termination will be in the Commission's best interest; or
- all of the work of any controlling operation is delayed for more than 90 consecutive calendar days, for any cause beyond the responsibility of the Contractor. The Commission may enter into an Agreement with the Contractor or may terminate the contract by written notice to the Contractor. If an agreement is entered into, it will be executed by the Contractor and the Commission, approved by the Surety and the Chief Counsel, or their designees.

When the Contract, or any portion is terminated before completion of all items of contract work, payment will be made for each unit of work fully completed at the contract unit price and payment for each partially completed unit of work will be as mutually agreed or at the percentage of the contract unit price that the cost of the partially completed unit is of a fully completed unit with a maximum allowable of 100%. No claim for lost profits or damages of any kind will be allowed for the termination.

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Acceptable material, obtained by the Contractor for the work, will be purchased from the Contractor at actual cost, as shown by receipted bills and actual cost records, at such points of delivery as may be designated.

Termination of any portion of the Contract does not relieve the Contractor of responsibilities for the completed work, nor will it relieve the surety of its obligation for any claim arising out of the performance of the work.

8.6 NONCOMPLIANCE BY THE CONTRACTOR — In addition to the elective measures the Commission may take for violation of the Contract, the Commission will also have the discretionary right to take any or all of the following actions if the Contractor fails, neglects, or refuses to comply with the requirements:

- The Commission may shut down the work until the requirements of the violated section are met. In this event, no remission will be made in contract time for the period for which the work is shut down.
- The Commission may withhold payment of estimates for work completed until the requirements of the violated section are met.
- The Commission may enter upon the project and perform all work necessary to meet the requirements of the section violated, then deduct the cost from money due or to become due to the Contractor or the surety.
- The Commission has the right to enter upon the project and repair or replace public or private property which has been damaged, to estimate the amount of such damage, and to deduct the amount from money due or to become due to the Contractor or the surety. When money is deducted as provided, the Commission will settle with the property owner and secure a written statement, releasing the Commission and the Contractor from further responsibility for such damage.

SECTION 9 — PAYMENT FOR SERVICES

9.1 PRICE PROVISIONS —

(a) The Contractor agrees to be compensated for the performance of Work in accordance with the provisions of this Agreement and Appendix A (the “Price Sheets”). The Price Sheets shall set forth the maximum amount (the “Not to Exceed Amount”) for all allowable costs subject to mutual agreement of the Commission and Contractor.

(b) The Contractor shall accept as full compensation for all Work provided hereunder those charges set forth in the Price Provisions. The Commission shall not pay the Contractor any amount for the Work in addition to the amounts set forth in the Price Provisions unless such amounts are expressly approved in writing by the Commission.

(c) The acceptance by the Contractor of final payment hereunder, whether or not such payment is made pursuant to any judgment or order of any court or otherwise, shall be and shall operate as a release to the Commission from all claims by and liability to the Contractor for anything theretofore done or furnished for or related to the Work, or for any prior act, neglect, fault or default of the Commission, or of any person relating to or affecting the Work, except only such claims against the Commission as are specifically reserved in writing prior to accepting the final payment hereunder.

9.2 CHANGES AND EXTRA WORK —

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(a) The Commission reserves the right to order changes which may result in additions to, reductions to or deletions from the amount, type or value of the Work required by this Agreement. Any such work shall be known as “Increased Work” or “Extra Work” if the change requires additions to the Scope of Work; or “Decreased Work”, if the change requires reductions to or deletions from the Scope of Work (collectively, “Changed Work”). The Commission and the Contractor shall negotiate in good faith and reach mutual written agreement for an increase or reduction, as the case may be, to the cost and Not to Exceed Amount of the Project resulting from the Changed Work prior to proceeding with such Changed Work, and bilateral Amendments shall be entered into by the parties herewith.

(b) The Commission reserves the right to have any items, which might be considered Extra Work, performed by parties other than the Contractor. This right is contingent upon the execution of non-disclosure/non-compete agreements between the Contractor, the Commission and the third party prior to any work being performed by a third party. The Contractor shall not unreasonably withhold its approval and agreement to any such request.

(c) No Extra Work shall be performed except pursuant to written orders subject to mutual written agreement and authorization of the Project Manager or Commission and the Contractor expressly and unmistakably indicating the party’s intention to treat the work described therein as Extra Work. Bilateral Amendments to the Agreement shall be entered into by the parties herewith for such Extra Work.

(d) No change in or modification, termination or discharge of this Agreement in any form whatsoever, shall be valid or enforceable unless it is in writing and signed by the party to be charged therewith or his duly authorized representative; provided, however, that any change in or modification, termination or discharge of this Agreement, expressly provided for in this Agreement shall be effective as so provided. The Commission may only be bound hereunder by a properly authorized officer of the Commission.

(e) In the event that the Commission shall order Extra Work for which there are no applicable rates set forth in the Price Provisions, it is understood and agreed by the Contractor that the Commission and the Contractor shall negotiate a mutually agreeable price to be paid by the Commission prior to the Contractor’s performance of such Extra Work. Bilateral Amendments to the Agreement shall be entered into by the parties herewith for such Extra Work.

(f) Except for emergency services, the Contractor shall give the Commission ten (10) business days notice of its intent to make any changes to the system, and no such changes shall be allowed unless the resulting system is functionally equal to or better than that specified in the approved Interchange Construction Documents and the other Contract Documents as determined by the Project Manager. Notwithstanding the approval of the Project Manager, if any change adversely impacts the Commission, the Contractor (i) shall modify the system so that it is compatible to the Commission’s requirements or (ii) shall reinstate the system to the former state that was compatible to the Commission’s requirements.

9.3 FINAL INSPECTION, ACCEPTANCE TESTING, AND FINAL PAYMENT

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(a) Final Inspection. When the project is substantially complete, make arrangements for a mutual final inspection. Substantial completion is the date when at least 90% of the contract work has been completed and the project can be used, occupied, or operated for its intended use.

At the time of final inspection, the Representative, along with the Contractor, will establish the following:

- The date of final inspection;
- A detailed listing of all physical, system, or process work incomplete or functionally distressed and requiring completion and/or correction; and
- A list of all certificates or documents requiring submission, completion, and/or correction.

As established during the final inspection, perform work as necessary for required correction or completion of all physical work items and complete, correct, and submit all outstanding certificates and documents.

When all physical, system, and process work has been satisfactorily completed according to the requirements of the contract, the Representative will establish the Date of Physical Work Completion.

Upon receipt and verification, the Representative will establish the date that all required certificates and/or documents are satisfactorily furnished.

When all physical system, and process work has been satisfactorily completed and all contractually required certificates and documents have been properly furnished, the date of project acceptance will be established.

(b) Project Acceptance. Upon completion of all work and final acceptance testing and following the final inspection by the Representative, the Representative will certify that the project is accepted.

SECTION 10 — DELAYS

In the event Contractor is delayed in performing Work and services under this Agreement by the Commission, Governmental bodies, Commission's other contractors, agents, public utilities, patrons, or other third parties, and such delays result in an increase in costs to Contractor or time for performance, the Commission and Contractor shall negotiate in good faith an equitable adjustment to the Agreement price, schedule, or both. The Contractor shall provide timely written notice within ten (10) days of becoming aware of a delay or the happening of an event, to provide the Commission with an opportunity to resolve the delay or potential delay.

SECTION 11 — PROJECT RECORDS

11.1 SCOPE — This section pertains to all project records that were used to prepare and compute the proposal; to prepare all schedules used on the project; to record the progress of work on the project; and to record, compute and/or analyze all costs incurred on the project, including those used in the preparation or presentation of claims to the Commission.

11.2 DEFINITION — Charts, graphs, cross-sections, plans, photographs, schedules, reports, accounting statements, accounting ledgers, balance sheets, proposal sheets, take-off sheets, cost estimates, cost

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records, payroll records, financial documents, notes, memoranda, correspondence and all other records, whether typewritten, handwritten, computerized, microfilmed, photographed, or recorded, that were prepared by or received by the Contractor.

11.3 RETENTION PERIOD — Retain the aforementioned project records for a period of 3 years or is required by statute which ever is longer from the date of receipt of final payment with the following exception:

- If any litigation, claim, or audit is started before the expiration of the 3-year period or the statute retention period, retain the records until all litigations, claims, or audit findings involving the records have been resolved.

11.4 INSPECTION — Upon written notice by the Representative or an authorized agent acting on behalf of the Commission, make available all requested project records for inspection and copying by Commission personnel or those authorized to act on its behalf. Make such records available at a reasonable time and place.

Refusal or repeated failure to present requested project records for inspection or copying may be considered grounds for declaring the Contractor in default and may be considered against qualification for work on future projects.

Exempt from this section are all project records, which under the Pennsylvania Rules of Civil Procedure, are deemed confidential and, therefore, exempt from discovery.

SECTION 12 — RECIPROCAL LIMITATIONS ACT REQUIREMENTS FOR CONSTRUCTION

12.1 REQUIREMENTS

(a) States Which Apply Preference Favoring In-State Proposers. The Reciprocal Limitations Act; Act 146 of 1986 requires the Commission to give resident proposers a preference against a non-resident proposer from any state that gives or requires a preference to proposers from that state. The amount of the preference will be equal to the amount of the preference applied by the state of the non-resident proposer. The following is a list of the states which have been found by the Department of General Services to have applied a preference for in-state proposers and the amount of the preference:

<u>STATE</u>	<u>PREFERENCE</u>
1. Arizona	5% (construction materials from Arizona resident dealers only)
2. Montana	3%
3. West Virginia	2.5% (construction, repair, or improvement of any buildings)
4. Wyoming	5%

(b) States Which Prohibit Use of Out-of-State Goods, Supplies, Equipment, or Materials. The Reciprocal Limitations Act also requires the Commission not to specify, use or purchase any goods, supplies, equipment or materials which are produced, manufactured, mined or grown in any state that prohibits the specification for, use or purchase of such items in or on its public buildings or other works when such items are not produced, manufactured, mined or grown in such state. The following is a list of

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the states which have been found by the Department of General Services to have prohibited the use of out-of-state goods, supplies, equipment, materials or proposers and the type of prohibition:

<u>STATE</u>	<u>PROHIBITION</u>
1. Georgia	Forest Products Only
2. New Mexico	Construction
3. New Jersey	Major Household Appliances, Chain Link Fence, Portable Sanitation Units, Glass, Glazier Supplies, Carpet and Cushion, Shades, Upholstery Materials and Supplies, Room Air Conditioning, Electrical Supplies, Plumbing Supplies, Hardware Supplies, Fasteners, Lumber, Building Supplies, Fire Extinguishers, Fire Hose, Venetian Blinds, Drapes, Paper Towel Dispensers, Water Hose.

If the proposal discloses that the proposer is offering to supply one of the above-listed products from the listed state, it will be rejected. Contractors are prohibited from supplying these items from these states.

12.2 CALCULATION OF PREFERENCE - In calculating the preference, the amount of a proposal submitted by a Pennsylvania proposer will be reduced by the percentage preference which would be given to a non-resident proposer by its state of residency only for the purpose of determining the apparent low proposer.

SECTION 13 — CONTRACTOR INTEGRITY PROVISIONS

13.1 DEFINITIONS

(a) Definitions.

1. Confidential information means information that is not public knowledge, or available to the public on request, disclosure of which would give an unfair, unethical, or illegal advantage to another desiring to contract with the Commission.

2. 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, proposal, or contractual terms, the Commission will be deemed to have consented by virtue of execution of this agreement.

3. Contractor means the individual or entity that has entered into this agreement with the Commission, including directors, officers, partners, managers, key employees, and owners of more than a 5% interest.

4. Financial Interest means:

4.a ownership of more than a 5% interest in any business; or

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4.b holding a position as an officer, director, trustee, partner, employee, or the like, or holding any position of management.

5. Gratuity means any payment of more than nominal monetary value in the form of cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind.

(b) The Contractor will maintain the highest standards of integrity in the performance of this agreement and will take no action in violation of state or federal laws, regulations, or other requirements that govern contracting with the Commission.

(c) The Contractor will not disclose to others any confidential information gained by virtue of this agreement.

(d) The Contractor will not, in connection with this or any other agreement with the Commission, directly or indirectly, offer, confer, or agree to confer any pecuniary benefit on anyone as consideration for the decision, opinion, recommendation, vote, other exercise of discretion, or violation of a known legal duty by any officer or employee of the Commission.

(e) The Contractor will not, in connection with this or any other agreement with the Commission directly or indirectly, offer, give, or agree or promise to give to anyone any gratuity for the benefit of or at the direction or request of any officer or employee of the Commission.

(f) Except with the consent of the Commission, neither the Contractor nor anyone in privity with him will accept or agree to accept from, or give or agree to give to, any person, any gratuity from any person in connection with the performance of work under this agreement except as provided therein.

(g) Except with the consent of the Commission, the Contractor will not have a financial interest in any other Contractor, subcontractor, or supplier providing services, labor, or material on this project.

(h) The Contractor, upon being informed that any violation of these provisions has occurred or may occur, will immediately notify the Commission in writing.

(i) The Contractor, by execution of this agreement and by the submission of any bills or invoices for payment pursuant thereto, certifies and represents that he has not violated any of these provisions.

(j) The Contractor will, upon the inquiry or request of the Commission's Internal Audit Group, will provide, or if appropriate, reasonably and promptly make available to that office and its representatives for inspection and copying, any information of any type or form deemed relevant by the Internal Audit Group to the Contractor's integrity, as that term is defined by Pennsylvania law or management directives. This information may include, but is not limited to, the Contractor's business or financial records, or documents or files of any type or form regarding this agreement. The Contractor will retain this information for three years beyond contract termination unless otherwise provided by law.

(k) For violation of any of the above provisions, the Commission may terminate this and any other agreement with the Contractor, claim liquidated damages in an amount equal to the value of anything received in breach of these provisions, claim damages for all expenses incurred in obtaining another Contractor to complete performance hereunder, and debar and suspend the Contractor from doing

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business with the Commission. These rights and remedies are cumulative, and the use or nonuse of any one will 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, regulations, or otherwise.

SECTION 14 – SETTLEMENT OF DISPUTES

(a) The parties will attempt in good faith to resolve any dispute arising out of or relating to the Contract or with respect to the Contract Work. The project manager for either party may request the other to meet within ten (10) days after notice of the dispute. If the matter has not been resolved within thirty (30) days after notice of such dispute, the Project Managers shall refer the matter to senior executives at their respective organizations who have the authority to settle the controversy. The senior executives shall meet for negotiations within fifteen (15) days of the referral at a mutually agreed time and place. The senior executives will negotiate in good faith to reach agreement. If the parties are unable to settle the dispute within sixty (60) days after written notice of the dispute, the Contractor and the Commission agree to enter into binding arbitration as described in paragraph (b) below.

(b) Any dispute under this Contract shall be determined as follows: The American Arbitration Association (AAA) Commercial Arbitration Rules (most recent edition) shall govern. The Arbitration shall take place in Pennsylvania and shall be governed by the laws of the Commonwealth of Pennsylvania. The arbitration shall be heard by one arbitrator who is mutually acceptable to the parties. If the Contractor or the Commission cannot agree on an arbitrator, each party shall select one arbitrator and the two arbitrators so selected shall choose a third and the arbitration shall be to the three arbitrators. The Contractor and the Commission agree to cooperate to permit any arbitration proceeding to be conducted as expeditiously as possible. Any award rendered by the arbitrator(s) shall be final and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof. The arbitrator(s) shall be bound to follow the provisions of this Contract in resolving the dispute, and may not award punitive, special, or consequential damages with respect to any such controversy, claim, or dispute. In the case of arbitration before three arbitrators, the concurrence of two shall establish the award. The cost of the arbitrator(s) shall be shared equally by the Contractor and the Commission. The arbitrator(s) shall be bound to follow the provisions of this Contract in resolving the dispute, and may not award punitive, special, or consequential damages with respect to any such controversy, claim, or dispute. It is agreed by both parties that the arbitrator's decision shall be final and binding on the parties, and any award of the arbitrator(s) may be entered or enforced in any court of competent jurisdiction.

(c) Notwithstanding the preceding arbitration provision, the Commission and the Contractor agree that either party hereto may institute an action seeking injunctive or other equitable relief in connection with any dispute under this Contract or with respect to the Work, and that any such action may be brought independently of or in connection with any arbitration proceeding, and whether before or after an arbitration proceeding has been commenced; provided, however, that any such action shall be brought only in a state or federal court located in Dauphin County, Pennsylvania and in no other court.

(d) Pending any decision, appeal or judgment or the settlement of any dispute arising under this Agreement or with respect to the Work, the Contractor shall proceed diligently with the performance of the Work.

SECTION 15 – CONTRACTOR RESPONSIBILITY PROVISIONS

For the purpose of these provisions, the term Contractor is defined as any person, including, but not limited to, a bidder, offer or, loan recipient, grantee, or sub-grantee, who has furnished or seeks to furnish

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goods, supplies, services, or leased space, or who has performed or seeks to perform construction activity under contract, subcontract, grant, or sub-grant with the Commonwealth, or with a person under contract, subcontract, grant, or sub-grant with the Commonwealth or its state-affiliated entities, and state-related institutions. The term Contractor may include a permittee, licensee, or any agency, political subdivision, instrumentality, public authority, or other entity of the Commonwealth.

1. The Contractor must certify, in writing, for itself and all its approved subcontractors that as of the date of its execution of any Commonwealth contract, that neither the Contractor, nor any subcontractors are under suspension or debarment by the Commonwealth or any governmental entity, instrumentality, or authority and, if the Contractor cannot so certify, then it agrees to submit, along with the bid/proposal, a written explanation of why such certification cannot be made.

2. The Contractor must also certify, in writing, that as of the date of its execution, of any Commonwealth contract it has no tax liabilities or other Commonwealth obligations.

3. The Contractor's obligations pursuant to these provisions are ongoing from and after the effective date of the Agreement through the termination date thereof. Accordingly, the Contractor shall have an obligation to inform the contracting agency if, at any time during the term of the Agreement, it becomes delinquent in the payment of taxes, or other Commonwealth obligations, or if it or any of its subcontractors are suspended or debarred by the Commonwealth, the federal government, or any other state or governmental entity. Such notification shall be made within 15 days of the date of suspension or debarment.

4. The failure of the Contractor to notify the contracting agency of its suspension or debarment by the Commonwealth, any other state, or the federal government shall constitute an event of default of the contract with the Commonwealth.

5. The Contractor agrees to reimburse the Commonwealth for the reasonable costs of investigation incurred by the Office of State Inspector General for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the Commonwealth, which results in the suspension or debarment of the Contractor. Such costs shall include, but shall not be limited to, salaries of investigators, including overtime; travel and lodging expenses; and expert witness and documentary fees. The Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.

6. The Contractor may obtain a current list of suspended and debarred Commonwealth contractors by either searching the Internet at <http://www.dgs.state.pa.us/debarment.htm> or contacting the:

Department of General Services
Office of Chief Counsel
603 North Office Building
Harrisburg, PA 17125
Telephone No: (717) 783-6472
FAX No: (717) 787-9138



Pennsylvania
Turnpike
Commission

Open Road Electronic Toll Collection System on Interstate 80 in
Pennsylvania
August, 2008
Final

ATTACHMENT C – PREVAILING WAGES

Prevailing Wages Project Rates

Project Name:
Awarding Agency:
Contract Award Date: 5/20/2008
Serial Number:
Project Classification: (Building, Highway)
Determination Date:
Assigned Field Office:
Field Office Phone Number:
Toll Free Phone Number:

(Building)	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	7/1/2007		\$27.73	\$13.37	\$41.10
Boilermaker (Repair Work)	3/1/2007		\$20.82	\$13.72	\$34.54
Boilermakers	9/30/2007		\$36.86	\$21.31	\$58.17
	9/30/2008		\$39.76	\$21.31	\$61.07
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/6/2007		\$26.13	\$14.07	\$40.20
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	5/1/2007		\$23.71	\$9.03	\$32.74
Cement Finishers	6/1/2006		\$24.03	\$6.70	\$30.73
	6/1/2007		\$24.78	\$6.90	\$31.68
Dock Builder/Pile Drivers	1/1/2008		\$27.85	\$11.50	\$39.35
	1/1/2009		\$28.85	\$12.00	\$40.85
	1/1/2010		\$29.95	\$12.25	\$42.20
Drywall Finisher	5/1/2007		\$22.06	\$11.32	\$33.38
	5/1/2008		\$22.06	\$12.32	\$34.38
Electric Lineman	3/1/2006		\$35.15	\$14.64	\$49.79
Electricians	6/1/2006		\$26.00	\$16.20	\$42.20
	6/1/2007		\$27.00	\$17.58	\$44.58
Elevator Constructor	1/1/2007		\$36.30	\$15.06	\$51.36
	1/1/2008		\$37.85	\$16.47	\$54.32
Elevator Tender (Use Elevator Apprentice or Constructor)	1/1/2005		\$0.00	\$0.00	\$0.00
Glazier	5/1/2007		\$22.28	\$11.72	\$34.00
	5/1/2008		\$23.28	\$11.72	\$35.00
	5/1/2009		\$24.53	\$11.72	\$36.25

Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2006	\$27.07	\$22.30	\$49.37
	7/1/2007	\$29.07	\$22.30	\$51.37
	7/1/2008	\$31.07	\$22.30	\$53.37
Laborers (Class 01 - See notes)	5/1/2007	\$18.05	\$10.28	\$28.33
Laborers (Class 02 - See notes)	5/1/2007	\$19.10	\$10.28	\$29.38
Laborers (Class 03 - See notes)	5/1/2007	\$20.87	\$10.25	\$31.12
Laborers (Class 04 - See notes)	5/1/2007	\$22.37	\$10.25	\$32.62
Millwright	5/1/2007	\$24.27	\$9.03	\$33.30
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2007	\$26.44	\$15.17	\$41.61
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2007	\$28.69	\$15.93	\$44.62
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2007	\$26.16	\$15.08	\$41.24
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2007	\$28.42	\$15.84	\$44.26
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2007	\$24.21	\$13.91	\$38.12
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2007	\$23.43	\$13.69	\$37.12
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2007	\$22.94	\$13.54	\$36.48
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2007	\$22.06	\$13.28	\$35.34
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2007	\$31.73	\$17.30	\$49.03
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2007	\$31.39	\$17.21	\$48.60
Painters Class 1 (see notes)	5/1/2007	\$21.40	\$11.32	\$32.72
	5/1/2008	\$21.40	\$12.32	\$33.72
Painters Class 2 (see notes)	5/1/2007	\$23.30	\$11.32	\$34.62
	5/1/2008	\$23.30	\$12.32	\$35.62
Painters Class 3 (see notes)	5/1/2007	\$24.25	\$11.32	\$35.57
	5/1/2008	\$24.25	\$12.32	\$36.57
Plasterers	6/1/2006	\$23.91	\$6.90	\$30.81
	6/1/2007	\$24.61	\$7.15	\$31.76
Plumbers and Steamfitters	6/1/2006	\$30.20	\$15.16	\$45.36
	6/1/2007	\$31.80	\$16.56	\$48.36
Roofers	6/1/2007	\$22.00	\$11.76	\$33.76
Sheet Metal Workers	5/1/2007	\$26.50	\$15.95	\$42.45
	5/1/2008	\$28.25	\$15.95	\$44.20
	5/1/2009	\$30.00	\$15.95	\$45.95
Sprinklerfitters	4/1/2007	\$31.75	\$14.65	\$46.40
	1/1/2008	\$31.75	\$15.55	\$47.30

	4/1/2008	\$32.75	\$15.55	\$48.30
	1/1/2009	\$32.75	\$16.55	\$49.30
	4/1/2009	\$33.85	\$16.55	\$50.40
	1/1/2010	\$33.85	\$17.60	\$51.45
Terrazzo Finisher	5/1/2007	\$25.78	\$12.53	\$38.31
Terrazzo Setter	5/1/2007	\$25.28	\$15.25	\$40.53
Tile & Marble Finisher	5/1/2007	\$20.17	\$12.42	\$32.59
	5/1/2008	\$21.72	\$12.47	\$34.19
	5/1/2009	\$23.32	\$12.52	\$35.84
Tile & Marble Layer	5/1/2007	\$23.08	\$12.92	\$36.00
	5/1/2008	\$24.63	\$12.97	\$37.60
	5/1/2009	\$26.23	\$13.02	\$39.25
Truckdriver class 1 (see notes)	5/1/2007	\$26.58	\$0.00	\$26.58
Truckdriver class 2 (see notes)	5/1/2007	\$26.65	\$0.00	\$26.65
Truckdriver class 3 (see notes)	5/1/2007	\$27.14	\$0.00	\$27.14

(Heavy & Highway)

	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenters	5/1/2007		\$23.99	\$7.77	\$31.76
Iron Workers (Highway Reinforcing)	7/1/2006		\$24.42	\$22.30	\$46.72
	7/1/2007		\$26.42	\$22.30	\$48.72
	7/1/2008		\$28.42	\$22.30	\$50.72
Laborers (Class 01 - See notes)	5/1/2007		\$18.48	\$9.53	\$28.01
Laborers (Class 02 - See notes)	5/1/2007		\$18.48	\$9.53	\$28.01
Laborers (Class 03 - See notes)	5/1/2007		\$19.12	\$9.53	\$28.65
Laborers (Class 04 - See notes)	5/1/2007		\$18.83	\$9.53	\$28.36
Laborers (Class 05 - See notes)	5/1/2007		\$19.69	\$9.53	\$29.22
Laborers (Class 06 - See notes)	5/1/2007		\$20.05	\$9.53	\$29.58
Laborers (Class 07 - See notes)	5/1/2007		\$19.50	\$9.53	\$29.03
Laborers (Class 08 - See notes)	5/1/2007		\$18.92	\$9.53	\$28.45
Laborers (Class 09 - See notes)	5/1/2007		\$19.21	\$9.53	\$28.74
Laborers (Class 10- See notes)	5/1/2007		\$19.69	\$9.53	\$29.22
Laborers (Class 11 -See Notes)	5/1/2007		\$13.87	\$9.53	\$23.40
Laborers (Class 12 -See Notes)	5/1/2007		\$18.48	\$9.53	\$28.01
Operators (Highway, Class 01 - See Notes)	5/1/2007		\$24.48	\$14.67	\$39.15

Operators (Highway, Class 01a - See Notes)	5/1/2007	\$26.73	\$15.35	\$42.08
Operators (Highway, Class 02 - See Notes)	5/1/2007	\$23.53	\$14.10	\$37.63
Operators (Highway, Class 03 - See Notes)	5/1/2007	\$22.96	\$13.75	\$36.73
Operators (Highway, Class 04 - See Notes)	5/1/2007	\$22.53	\$13.62	\$36.15
Operators (Highway, Class 05 - See Notes)	5/1/2007	\$22.02	\$13.47	\$35.49
Operators (Highway, Class 06 - See Notes)	5/1/2007	\$24.72	\$14.73	\$39.45
Operators (Highway, Class 06/A - See Notes)	5/1/2007	\$26.97	\$15.39	\$42.36
Operators (Highway, Class 07/A - See Notes)	5/1/2007	\$29.37	\$16.72	\$46.09
Operators (Highway, Class 07/B - See Notes)	5/1/2007	\$28.23	\$16.03	\$44.26
Piledrivers	5/1/2007	\$23.99	\$7.77	\$31.76
Truckdriver class 1 (see notes)	5/1/2007	\$26.58	\$0.00	\$26.58
Truckdriver class 2 (see notes)	5/1/2007	\$26.65	\$0.00	\$26.65
Truckdriver class 3 (see notes)	5/1/2007	\$27.14	\$0.00	\$27.14

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If you can not find a classification under Heavy & Highway please refer to the Building wage rates. For further information on construction types review the Operator and Laborer Notes on this site.

Addendum No. 1
RFP 08-10340-1540
Open Road Electronic Toll Collection System on
Interstate 80 in Pennsylvania

Prospective Proposers: You are hereby notified of the following information in regard to the referenced RFP:

REVISIONS

1. Page 9, Part I.12 (second paragraph)
"No other distribution of proposals will be made by the ~~Proposer~~ Commission."
2. Page 11, Part I.22 (first sentence)
"The Term of the Contract will commence on the Effective Date (as defined below) ~~for a period of 10 years, with up to two (2) five (5) year renewable extensions for maintenance.~~" and continue through Phase I – Design, Manufacturing, Factory Acceptance Test; Phase II – Installation Testing, Approval and Commissioning; Phase III – Performance Evaluation; Phase IV - Warranty - Operational/Preventive/Corrective Period 1; and Phase V – Warranty – Operational Preventive/Corrective Period 2 with optional renewable extensions defined in Phase VI and VII on pages 66 and 67."
3. Page 30 Table 2 – Capabilities Instrumented by Lane Type (last lane type)
"Right (outside) shoulders ~~(12')~~ greater than or equal to (10')"
4. Page 32 Part V.4 Figure #2
Delete this page in its entirety.
5. Page 45, Part V.7.5 (last paragraph, second sentence)
"The DVMS output shall be in ~~MPEG-2~~ MPEG 4 format . . ."
6. Page 58, Part V.12.3 (second paragraph)
"The Contractor shall provide equipment for filtering, conditioning, and distribution of line power to all Tolling Zone equipment. The Contractor shall provide Uninterruptible Power Supplies (UPS) and appropriate switching hardware to provide for continued uninterrupted operation of the Open Road Tolling system spanning an interruption of utility power until stand by generators come on-line or utility power is restored. ~~UPS power shall be provided for the following equipment systems.~~ The UPS units shall supply sufficient power and time to allow safe, secure, regular shutdown of all system components, operations, and Tolling Zones such that no data is lost or altered due to the power failure. At a minimum, fifteen (15) minutes of UPS power shall be provided for the key Tolling Zone elements needed for maintenance and performance of the following subsystems:

Open Road Toll Lanes:

- Tolling Zone controllers
 - AVC Subsystem
 - ETC Sub-Systems
 - Video Image Capture Sub-System
 - LAN, WAN, and all communications systems
 - ~~Vehicle Detection and Recording,~~
 - ~~ETC Reading,~~
 - ~~Video Image Capture, and~~
 - ~~Automatic Vehicle Classification.”~~
7. Page 62, VI.1
“This Project shall be divided into ~~six~~ seven overall activity phases, generally delineated by successful completion of major milestones.”
8. Page 66, Part VI.1.5 (first sentence)
"This Phase of the Contract, Phase V, includes continued toll system maintenance for ~~up to ten (10) years. of a Maintenance Period.~~"
9. Page 69, Part VI.3 (last paragraph, last sentence)
~~“No more than 3 sites will require installation completion in 2009.”~~
10. Attachment A
Please see attached, revised Attachment A, which replaces Attachment A in the original RFP dated August 1, 2008.

ADDITION

1. Page 17, Part II.9 Proposal Guarantee
A Proposal Security (Security Bond), with corporate surety listed on the current Federal Register with an underwriting limitation equal to or greater than the full amount of the Proposal (such sureties must be rated “A- (Excellent)” or better by A.M. Best Company), in the principal amount of Ten (10%) of the total amount for Task Items Nos. 1 through 15, inclusive on Attachment A as set forth in the Price Proposal included with each Proposer’s Proposal, must be submitted with each Proposer’s Proposal as security for such Proposal as set forth in Part II.9 of the Request for Proposals. The Security Bond of the three (3) most qualified, responsive and responsible Proposers will be retained and remain in full effect until the execution the Contract by one of such Proposers. In the event that the Issuing Office determines to conduct discussions with any or all of the three (3) Proposers (determined as provided in the preceding sentence) for the purpose of obtaining “best and final offers” as set forth in Part I.16 of the Request for Proposals, upon receipt of written notice thereof from the Issuing Office, the Proposers identified by the Issuing Office to participate in such “best and final offer” process will provide a replacement Security Bond to the Issuing Office in a form to be provided at the time of such notice and as a condition of participating in such process, in place of the Security Bond described above. At that time, any Proposer who is not identified to participate in such process shall no longer be considered for the award of the Contract and shall withdraw its Security Bond.

Please refer to Attachment D (Security Bond) which must be completed and returned with the Cost Proposal in accordance with Part I.12 Proposals.

QUESTIONS & ANSWERS

Following are the answers to questions submitted in response to the above referenced RFP as of August 15, 2008. All of the questions have been listed verbatim, as received by the Pennsylvania Turnpike Commission.

Q1. Respectfully requests that the response time for the subject RFP be extended for 30 days and that additional time be granted for asking questions. We know that the Commission is interested in receiving competitive proposals and given the scope of the project, particularly the need to design and procure the ORT gantries and the need for a site survey to determine power and communications requirements at the toll sites, additional time is needed to submit a proposal. We would appreciate a favorable response within the next few days.

A1. The Commission will maintain the deadline for the submission as set forth in the RFP.

Q2. In Part I.22 of the RFP, there is mention of a 10-year contract term. In Part IV of the RFP the Statement of Work describes a 1-year warranty/maintenance period followed by a 10-year maintenance period (with provision for two additional 5-year maintenance options). Assuming roughly 18 months from NTP to opening, plus a 1-year warranty and a 10-year maintenance period, the total contract term would be 12.5 years. Please clarify the term of the base contract (i.e. excluding options).

A2. See Addendum 1, Item 2 under Revisions.

Q3. In Part II.7 of the RFP, the DBE/MBE/WBE participation level in this contract is stated as 10% total. Does the Commission mean 10% of the entire contract value, i.e. inclusive of all maintenance years?

A3. This includes all work from Phase I through Phase III approval.

Q4. In Part II.9 of the RFP, mention is given to the requirement of a Proposal Guarantee. We are eager to comply with this requirement and would like to know the amount of the required proposal guarantee that will need to accompany the cost submittal, so that we may notify our surety in order to have the necessary documents processed in a timely manner.

A4. See page 2 of Addendum 1 under Addition.

Q5. In Part VI.4 of the RFP, how many hardcopies of each document and drawing deliverable will need to be submitted? Does the required quantity have to be delivered for each and every revision of a document or drawing that is submitted or only for the final approved version?

A5. Refer to Part VI.4 of the RFP.

Q6. In order to protect both the Commission and ourselves, we respectfully request that the following mutually beneficial clause be added under Attachment B, Section 7.7, Indemnity:

"Notwithstanding anything else contained in this Agreement, in no event shall either party be liable to the other party or to any other person for any indirect, consequential, incidental, special or punitive damages, including without limitation, any loss of use or production, or any loss of data, profits or revenues, regardless of the form of action (whether for breach of warranty, breach of contract, in tort or otherwise) and whether advised of the possibility of such damages or not."

A6. No.

Q7. Attachment B, Section 8.4, Liquidated Damages, outlines the penalties associated with the Project. However, no mention is given as to whether or not these penalties are capped by the Commission. We respectfully requests that any liquidated damages assessed under the Agreement have a maximum cap of ten percent of the total contract value and that the following language be added to the RFP:

"In the event the Contractor is assessed liquidated damages in accordance with this section, Contractor's liability for such damages shall not exceed ten percent (10%) of the total of all amounts paid by the Commission under this Agreement."

A7. No.

Q8. Do we need to include the cost of the initial H/W Spares in the base Equipment costs?

A8. Yes

Q9. Is the cost for Spares replenishment (spare parts replacement) to be included in the annual **Warranty/Maintenance pricing?**

A9. Yes

Q10. Is the Commission Exempt from Sales Taxes?

A10. Reference Attachment B, page 21, paragraph 7.2.

Q11. Who will be responsible for the on-going and initial installation costs for communications between the Lanes and the B/O operations building (T-1 lines, etc.)?

A11. The Commission's Information Technology Department will be responsible for the installation and operation of all communication equipment between the Tolling Zone and back office operations building.

Q12. Who will be responsible for the on-going and initial installation costs for communications between the Lanes and the Maintenance Facility (T-1 lines, etc.) where the MOMS equipment will be located?

A12. Communications will be addressed using a business partner VPN between the Proposers facility and the Commission's Central Office. The Commission will be responsible for their Internet connectivity and equipment and the Proposer will be responsible for their own internet connectivity and equipment. It will require a joint effort to establish the connectivity between the parties.

Q13. Do we need to “roll forward” the costs from the “...Material Costs” sheet to the “Summary” sheet? If so, which Task Item should they roll into?

A13. The Material Cost sheet in Attachment A does not apply to this RFP and is deleted by this Addendum 1.

Q14. Should the costs shown on the “...Materials Costs” sheet be fully loaded (i.e., include freight, taxes, G&A, profit/fee, etc.)?

A14. The Material Cost sheet in Attachment A does not apply to this RFP and is deleted by this Addendum 1. The Proposer shall indicate its costs on the format provided on the Cost Summary sheet in the revised Attachment A of the RFP.

Q15. What is the projected “Allowable” fee that will be added to:

- Subcontractor costs
- Materials
- Travel expenses
- ODC’s (Other/Misc costs)

A15. The Proposer shall indicate its costs on the format provided on the Cost Summary sheet in the revised Attachment A of the RFP.

Q16. Per Item’s 7 & 10 in Table 1, it’s the responsibility of the Contractor to ‘fabricate’, ‘procure’ and ‘deliver’ the Gantries. Which Item in the “... Material Costs” pricing sheets, are the costs for fabricating (and purchasing) the gantries to be included?

A16. The Material Cost sheet in Attachment A does not apply to this RFP and is deleted by this Addendum 1. The Proposer shall indicate its costs on the format provided on the Cost Summary sheet in the revised Attachment A of the RFP.

Q17. Per Item’s 22 & 23 in Table 1, it’s our understanding that the costs for providing/procuring the ETC Readers and Antennas should not be included in “... Material Costs” sheets (these will be purchased directly by the Commission)?

A17. The Material Cost sheet in Attachment A does not apply to this RFP and is deleted by this Addendum 1. The ETC Readers and Antennas will be purchased by the Commission.

Q18. Regarding Item’s 14-16 (Sub base, Reinforcement and Concrete) in the “... Material Costs” sheets, do these item’s fall under the scope of the Commission/Others and therefore should not be included cost/pricing sheets?

A18. The Material Cost sheet in Attachment A does not apply to this RFP and is deleted by this Addendum 1.

Q19. Per Item 27 in Table 1, it is the Commission’s responsibility to provide standby generators at each ORT zone site. Will these generators include an interface for monitoring the status of the generator by the MOMS?

A19. Generators purchased will have a Simple Network Management Protocol (SNMP) interface.

Q20. Per note 3 of Table 1 ‘the Contractor is cautioned that excessive bandwidth needs or overly conservative calculations are NOT acceptable’. The assessment of ‘excessive’ and ‘conservative’ is subjective. Therefore please clarify what is deemed excessive or overly conservative.

A20. Calculations must be based on real testing not on inflated estimates.

Q21. Per section V.7.7 all toll zones shall be synchronized to a single time source (NTP). Will the Commission be providing this time source? If this is to be provided by the Contractor, where are these costs to be rolled up in the Material Costs pricing sheets?

A21. This will be provided by the Commission.

Q22. Per Table 4, requirement #3 states “Transponder Read Success Rate.....associates the read to the correct vehicle.” Does requirement #3 only refer to the reading of tags since association of tags is also counted in performance requirement #2 (incorrect association)?

A22. Yes, this is just reading tags, because we cover association in requirement #2.

Q23. Per section V.10, the “the Commission will provide the power requirements of any equipment that is to be provided by Others upon request.” To correctly size the UPS and provide a cost effective solution, please provide the anticipated power requirements for the non-brief power interruption tolerant equipment to be provided by the Commission and expected to be on UPS power.

A23. The Cisco switch models we will use will run between 45W, 155 BTUs per hr and 140W, 483 BTUs per hr depending on the speeds and number of connections needed. We will also run a Cisco 3845 Integrated Services Router which generates approximately 555W (1890 BTU/hr) + 360W (1128 BTU/hr).

Q24. Per V.11 the MOMS facility is to communicate with the Tolling Zones and PTC Network Control. Please provide details (logical/physical architecture) of the communications system to be provided by the Commission.

A24. A business partner VPN (see response to question 12) will provide connectivity to all sites listed over the Commission WAN.

Q25. Please identify the quantity of redundant communication paths and associated service level agreement metrics for the communications between the maintenance facility and the Tolling Zones and PTC Network Control.

A25. The service level agreement (SLA) will be negotiated.

Q26. Is PTC Network Control and the Commission’s Toll Host located in the same location?

A26. No, however they are on the same LAN.

Q27. Per V.11.1 PTC Network Control are required to be alerted of failure/degraded condition at the Toll Zones. Please clarify if PTC Network Control requires alerts to be sent via email or other communications medium.

A27. The messages are sent like all other transaction messages - formats to be provided to the selected Proposer. Reference part V.11.1 Failure Detection and Reporting of the RFP

Q28. Per V.11.3 ‘the remote access mechanism must be installed and maintained in accordance with current Commission IT security requirements.’ However, the definition of these requirements will not be provided until just before or after NTP. Please provide these requirements during the proposal stage so that the level of effort required to implement the security requirements can be accurately costed.

A28. The remote access will be addressed through use of a business partner VPN.

Q29. Per VI.12 bandwidth estimates in the proposal ‘should’ address varying situations. Please clarify which situations are required in the proposal.

A29. This text describes a document (plan) that is to be developed during the design phase - not a requirement for the proposal.

Q30. RFP Section I.12, Proposals. How many CDs of each volume does the Commission require?

A30. The sealed Technical Proposal Package should contain one CD with all parts of the Technical Proposal and the sealed Price Proposal Package should contain one CD with all parts of the Price Proposal.

Q31. The pricing sheet indicates that profit is only applied to direct labor. How should profit associated with non-labor costs be broken out and presented?

A31. The Proposer shall indicate its costs in the format provided on the Cost Summary sheet in Attachment A.

Q32. Page 27, Part V, Table 1, Item #32. Does the contractor have to provide the conduit for the DVMS camera that is positioned 50’ from the tolling zone?

A32. No.

Q33. Pages 35-38. Some tolling zones show maintenance access in only one direction. Should there be access on both directions?

A33. No.

Q34. Page 45, second paragraph, states that DVMS output shall be in MPEG 2 format and later states storage capacity for MPEG-4 format. Is this correct or should they be the same format?

A34. See revisions above; they should be the same format, MPEG-4.

All other terms, conditions and requirements of the original RFP dated August 1, 2008 remain unchanged unless modified by this Addendum.