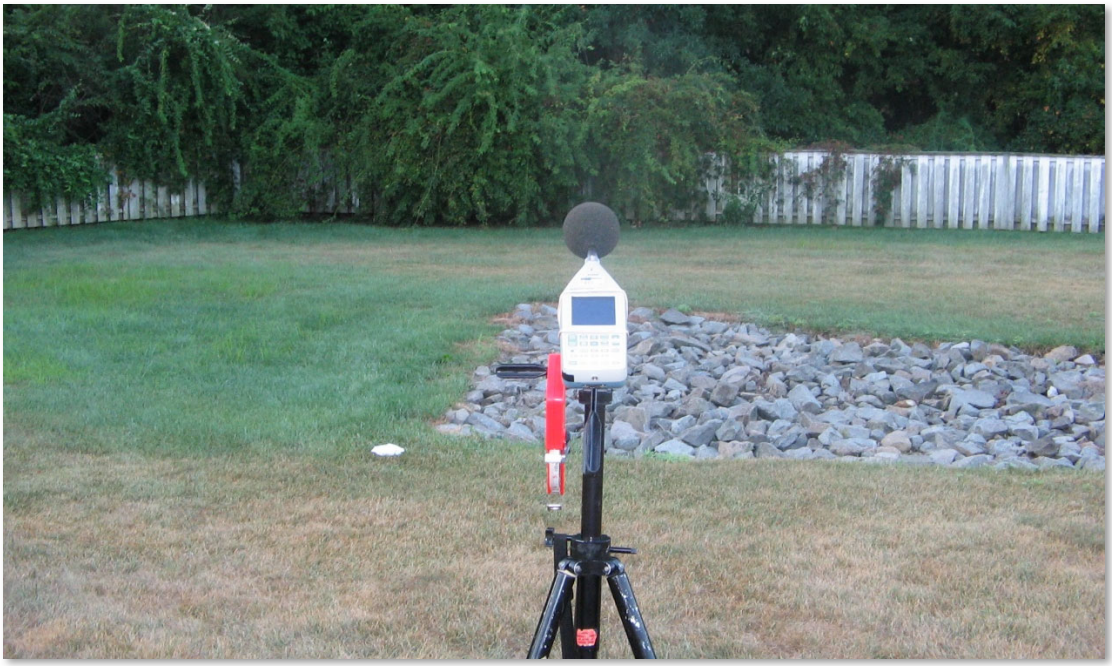
FINAL DESIGN ENGINEERING NOISE ANALYSIS REPORT



Pennsylvania Turnpike Interstate 95/276 Interchange (Sec D30) Project

MP 354.7 to MP 356.1

Bucks County, Pennsylvania

Prepared for:

PENNA TURN PIKE

Prepared by:

Gannett Fleming

Gannett Fleming, Inc.
207 Senate Avenue
Camp Hill, PA 17011

August **2023**

TABLE OF CONTENTS

FIGURES (Following Text)

TABLES (Following Figures)

APPENDICES (Following Tables)

GANNETT FLEMING
Excellence Delivered As Promised

Pennsylvania Turnpike, I-95/I-276 Interchange

Bucks County

DRAFT FINAL DESIGN ENGINEERING NOISE ANALYSIS

STAGE 2 PROJECT ELEMENTS

Executive Summary

The project involves the construction of a proposed interchange directly connecting Interstate Route 95 (I-95) and the Pennsylvania Turnpike (I-276) in Bristol Township, Bucks County. The study area is depicted in Figure 1. While the overall project includes widening and ramps that will allow for all movements between the existing I-95 and I-276 roadways, only I-276 road widening between Bensalem Blvd. and west of I-95 are proposed to be constructed in the current phase (Stage 2) of the project. Flyover ramps between the southern portion of I-95 (south of I-276) and the eastern portion of I-295 (east of I-95) were constructed in the first phase (Stage 1) of the project. The remaining six (6) ramps movements are anticipated to be constructed as part of a separate (Stage 2) phase of the project. However, the noise barrier for NSA 7 will be constructed during the current phase (Stage 2).

In July 2006, a Preliminary Engineering Noise Analysis (PENA) report was completed that evaluated noise levels and potential impacts related to the entire interchange project based on preliminary designs available at that time. The PENA report (dated July 2006) also referenced noise analyses performed for the project's 2001 Final Environmental Impact Statement (FEIS). As the project has progressed through the final design phase, more specific details related to the project plans, profiles, cross-sections, drainage features, right-of-way requirements, and structures have become available. The most recent refinement involved modification of the eastbound and westbound profile grades of I-276 within the western portion of the project. This modification resulted in changes to the previously submitted and approved Final Design Noise Analysis November 2009 Draft Report. These refinements have been considered in the development of final recommendations related to noise abatement features documented in this report.

Based on the evaluation of the noise levels associated with the preliminary engineering plans for the project developed to date, noise abatement features were determined to be warranted, feasible and reasonable only within NSAs 7, 17 and 18. Various noise barrier options were considered and evaluated in terms of abatement feature lengths, heights, and costs. This process resulted in the development of the following warranted, feasible and reasonable noise barriers along the project alignment:

- NSA 17 – A noise barrier averaging 17 feet in height and with a length of 950 feet running adjacent to I-276 westbound and Ramp C (I-95/I-295 to I-276 westbound).
- NSAs 18 and 7 – A noise barrier system averaging 15 feet in height and with a length of 3,065 feet running adjacent I-276 eastbound and Ramp A (I-276 EB to I-95 SB).

One public meeting was held virtually on March 22, 2023, with the property owners and renters in the NSAs 7, 17 and 18 communities to explain and discuss the noise analyses, barrier options, and choices for barrier textures. Based on the benefited receptors response to the survey and a combined voting percentage of 88% in favor of the noise barrier, NSA 17 will have a noise barrier with the Exposed Aggregate texture in Gray for the community side of the noise barrier. For NSAs 18 and 7, 91% of the respondents to the survey voted in favor of the noise barrier and chose Dry Stacked Stone texture in Gray for the community side of the noise barrier. In addition, PTC decided and chose Split Face Random Ashlar Stone for the barrier facing the highway.

No federal or state funds are being used on the I-95/I-276 Section D30 Project. The PTC has discretion to implement abatement for this project under existing noise criteria, which shall have no implication on noise policy and procedures utilized on future Federal or State funded projects.

Introduction

The project involves the construction of a proposed interchange directly connecting Interstate Route 95 (I-95) and the Pennsylvania Turnpike (I-276) in Bristol Township, Bucks County. The study area is depicted in Figure 1. While the overall project includes widening and ramps that will allow for all movements between the existing I-95 and I-276 roadways, only I-276 road widening between Bensalem Blvd. and west of I-95 are proposed to be constructed in the current phase (Stage 2) of the project. Flyover ramps between the southern portion of I-95 (south of I-276) and the eastern portion of I-295 (east of I-95) were constructed in the first phase (Stage 1) of the project. The remaining six (6) ramps movements are anticipated to be constructed as part of a separate (Stage 2) phase of the project. However, the noise barrier for NSA 7 will be constructed during the current phase (Stage 2).

Background and History

In July 2006, a Preliminary Engineering Noise Analysis (PENA) report was completed that evaluated noise levels and potential impacts related to the entire interchange project based on preliminary designs available at that time. The PENA report also referenced noise analyses performed for the project's 2001 Final Environmental Impact Statement (FEIS). As the project has progressed through the final design phase, more specific details related to the project plans, profiles, cross-sections, drainage features, right-of-way requirements, and structures have become available. The most recent refinement involved modification of the eastbound and westbound profile grades of both I-95 and I-276 within the western portion of the project. This modification resulted in changes to the previously submitted and approved Final Design Noise Analysis November 2009 Draft Report. These refinements have been considered in the development of final recommendations related to noise abatement features documented in this report.

Purpose

The purpose of the Final Design Noise Analysis (FDNA) was to refine the analyses conducted during the PENA process, with emphasis on the areas affected by the Stage 2 project elements where noise barriers were determined to be warranted, feasible and reasonable. For these areas, the analyses assessed the effects of the traffic noise, considered and compared various barrier options, and developed acoustical profiles for recommended barriers. Due to the more refined analyses conducted during the FDNA process, considerably more noise sensitive receptors were analyzed during the FDNA than during the PENA.

The project study area is located west of I-95 in Bristol Township, in Bucks County, Pennsylvania. The proposed construction includes widening of eastbound and westbound of I-276. The project is considered a Type I project as the addition of the new traffic lanes will cause a substantial horizonal alteration, as the project will halve the distance between

the traffic noise source and the closest receptor between the existing condition to the future build conditions.

Noise abatement has been evaluated for the noise study areas which meet the Pennsylvania Department of Transportation (PennDOT) and Federal Highway Administration (FHWA) criteria for a Type I project. This report focuses on the noise analysis and mitigation related to the 2050 design year Build Alternative.

PennDOT Noise Abatement Criteria (NAC), described in Table 1, for specific land use activities were used in the evaluation of traffic noise impacts. These criteria are based on criteria established in Title 23 Code of Federal Regulations, Part 772, U.S. Department of Transportation, Federal Highway Administration (FHWA), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, and guidelines for "increase over existing" noise levels as set forth in PennDOT Publication *Project Level Highway Traffic Noise Handbook Publication No.24*, dated May 2019. Predicted noise levels were determined using Version 2.5 of the FHWA Traffic Noise Model (FHWA TNM).

The noise level descriptor used for this project was the hourly equivalent noise level ($L_{eq}(h)$). $L_{eq}(h)$ is the steady state, A-weighted sound level, which contains the same amount of acoustic energy as the actual time-varying A-weighted noise level over a one-hour period. The FHWA and PennDOT define noise impact based upon seven activity categories, as identified in Table 1. Individual sites located within a given activity category are designated as noise sensitive receptors.

Noise impacts were also evaluated by comparing the predicted noise levels with existing noise levels. A noise impact was identified if the future (year 2050) noise level was predicted to be equal or exceed 66 dB(A), or if future noise levels within the project were predicted to cause a substantial noise increase ($\geq$10 dB(A)) as compared to existing noise levels (year 2019).

Noise Study Areas

The project study area was divided into the following noise study areas (NSAs) as shown in Figure 2:

NSA 7: Activity Category B land uses are located east of New Falls Road and south of I-276, adjacent to Ramp A (I-276 eastbound to I-95 southbound) and consists of ten residential properties. See Figure 2.

NSA 17: Activity Category B land uses are located east of Bensalem Blvd and north of I-276 westbound, adjacent to I-276 westbound and Ramp C (I-95/I-295 to I-276 westbound) and consists of nineteen residential properties. See Figure 2.

NSA 18: Activity Category B land uses are located east of Bensalem Blvd and west of New

Falls Road, adjacent to I-276 eastbound and Ramp A (I-276 eastbound to I-95 southbound) and consists of forty-two residential properties. See Figure 2.

Noise Modeling

The model used to predict worst case existing and future noise levels and to evaluate noise abatement options was the FHWA's TNM, Version 2.5. The FHWA TNM predicts noise levels at selected locations based on traffic data, roadway design, topographic features, and the relationship of the analysis site (receiver) to nearby roadways. Traffic data used for prediction of existing (year 2019) and future (year 2050) noise levels for both no-barrier and barrier conditions is contained in Appendix A. The percentages of automobiles, medium trucks, and heavy trucks used in the FHWA TNM modeling process were obtained from the Pennsylvania Turnpike Commission. The PENA report was completed in 2006, the field work and noise monitoring data collected were used to validate the noise model, which is still valid. The collected noise monitoring data are not used to predict the future build sound levels, which will not change this report conclusion. In addition, the adjacent land topography didn't change and the new future build noise model account for the design year (2050) traffic volume and additional receptors were added for better evaluation of noise mitigation for the NSAs.

Evaluation of Noise Impacts

Consideration of noise abatement is required in Pennsylvania if noise levels approach the NAC (approach is defined as 1 dB(A) below the noise abatement criteria) or create a substantial noise "increase over existing" (IOE) (10 dB(A)). The future-year noise levels were compared to the NAC approach levels (66 dB(A)) for land use Category B and to the increases over existing-year noise levels using PennDOT's NAC to determine if there would be any noise impacts. These comparisons are contained in the noise summary tables for each NSA, with the noise measurement sites and analysis sites (receivers) indicated within each NSA. Noise impacts were identified in each NSA based on predicted exterior noise levels exceeding the 66 dB(A) approach criteria level for Activity Category land uses B.

In addition to their use in evaluating noise impacts, noise analysis sites were used in the consideration of noise abatement for noise sensitive receptors within each NSA. Abatement measures such as traffic management devices and roadway realignment were determined not to be feasible. In addition, the topography and development in the area does not lend itself to the use of noise berms as an effective noise abatement technique. Therefore, noise abatement evaluations focused on the design of noise barrier walls.

Consideration of noise abatement was required in NSAs 7, 17 and 18 due to noise levels approaching or exceeding the NAC. Under PennDOT noise criteria, feasible noise barriers are those that provide at least 5 dB(A) of noise reduction for at least 50% of impacted receptors, while posing no safety, engineering, maintenance, constructability, drainage, or

utility impacts, or access restrictions. If determined to be feasible, a barrier was then evaluated for reasonableness. For a barrier to be reasonable based on PennDOT noise criteria, it must be cost-effective (square footage per benefited residential receptor (SF/BR) must be less than or equal to 2000), and the desires of the affected property owners and residents must be considered. Receptors are considered to be benefited if they receive 5 dB(A) or more noise reduction (insertion loss) from a barrier. To meet PennDOT's reasonableness criteria, a barrier must also achieve at least a 7 dB(A) noise reduction at one receptor.

No federal or state funds are being used on the I-95/I-276 Section D30 Project. The PTC has discretion to implement abatement for this project under existing noise criteria, which shall have no implication on noise policy and procedures utilized on future Federal or State funded projects.

A summary of abatement considerations within each NSA follows. See referenced tables for more details related to all barrier options considered.

NSA 17 (See Figure 2 and Table 2): Five of the seventeen receptors evaluated within this NSA were predicted to have levels at or above 66 dB(A) with the Build Alternative. As such, consideration of noise abatement within this NSA was warranted.

The following six abatement options were considered for NSA 17:

- Case 1 consisted of a 14 feet high wall, 1,116 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 60% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,408 < 2000, which meets PennDOT requirements).

- Case 2 consisted of a 16 feet high wall, 1,116 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 60% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,529 < 2000, which meets PennDOT requirements).

- Case 3 consisted of a 18 feet high wall, 1,116 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 60% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,649 < 2000, which meets PennDOT requirements).

- Case 4 consisted of a 20 feet high wall, 1,116 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 60% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved

and square footage per benefited receptor SF/BR 1,769 < 2000, which meets PennDOT requirements).

- Case 5 consisted of a 22 feet high wall, 1,116 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 60% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,885 < 2000, which meets PennDOT requirements).

- Case 6 consisted of an optimized wall, 14 to 24 feet high, and 950 feet long. It was determined to be feasible (≥5 dB(A) insertion loss provided for 60% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,480 < 2000, which meets PennDOT requirements).

NSA 18 and 7 (See Figure 2 and Table 3): Twenty-three of the fifty-one receptors evaluated within this NSA were predicted to have noise levels at or above 66 dB(A) with the Build Alternative. As such, consideration of noise abatement within this NSA was warranted.

The following six abatement options were considered for NSAs 18 and 7:

- Case 1 consisted of a 12 feet high wall, 3,732 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 78% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,826 < 2000, which meets PennDOT requirements).

- Case 2 consisted of a 14 feet high wall, 3,732 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 78% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,862 < 2000, which meets PennDOT requirements).

- Case 3 consisted of a 16 feet high wall, 3,732 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 83% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,775 < 2000, which meets PennDOT requirements).

- Case 4 consisted of a 18 feet high wall, 3,732 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 83% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,807 < 2000, which meets

PennDOT requirements).

- Case 5 consisted of a 20 feet high wall, 3,732 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 83% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,830 < 2000, which meets PennDOT requirements).

- Case 6 consisted of an optimized wall, 12 to 18 feet high, 3,065 feet long and was determined to be feasible (≥5 dB(A) insertion loss provided for 78% of impacted receptors) and reasonable (goal of 7 dB(A) insertion loss for at least one receptor was achieved and square footage per benefited receptor SF/BR 1,659 < 2000, which meets PennDOT requirements).

Parallel Barrier Noise Analyses

Recommended noise barriers were reviewed according to PennDOT noise, the guidelines state that "Absorptive-faced sound barriers will be analyzed for parallel barrier configurations where the ratio of distance between the barriers to barrier-height is less than 10:1".

Analyses were conducted to determine if there would be a need for absorptive material when considering the effects of multiple sound reflections between the recommended sound barriers at two locations containing sets of parallel barriers.

NSAs 17 and 18 (See Table 4 and Figure 3): The recommended NSA 17 barrier is 950 feet in length, has an average height of 17 feet, and is located north of I-276 westbound. The NSA 18 barrier is 3,065 feet in length, has an average height of 15 feet, and is located south of I-276 eastbound. Since such a condition has the potential to degrade the effectiveness of one or both of the barriers, one cross-section was chosen in order to calculate the barrier height to separation ratio. Since ratios of the one (1) section is below 10:1, it is likely that there will be degradation in sound level reduction for the receivers adjacent to the noise barriers. Therefore, the use of absorptive barrier treatments is warranted and recommended where NSA 17 and NSA 18 barriers are parallel to one another. This conclusion is consistent with those discussed in FHWA documentation and PennDOT Pub 24.

Construction Noise Considerations

The Commission is committed to minimizing disruption to local residents, business owners, and the traveling public while also providing for the efficient construction of the proposed improvements. To this end, it is anticipated that a specification will be included in the construction contract(s) detailing responsibilities and actions relative to pending disruptions and noise levels (a sample of which is included below):

SAMPLE CONSTRUCTION NOISE SPECIFICATION

The Commission is committed to minimizing disruption to local residents, business owners, and the traveling public. The Commission will assign an individual to support this commitment. Indicate at the pre-construction conference the individual assigned this responsibility.

Coordinate activities with the Commission's Manager of Public Information & Involvement. Refer media contacts to the Commission's Manager of Public Information & Involvement.

At least two (2) weeks in advance of the start of construction activity affecting the local residents, business owners, and traveling public, make arrangements with the local municipality to conduct an initial community meeting or distribute a Construction Notice to adjacent property owners. For this meeting, have appropriate company personnel attend and be prepared to inform the public of the planned construction activities and their impacts. At other times as necessary, attend municipal meetings to inform the public of anticipated major changes to construction activities. If distribution of a Construction Notice is chosen, the contractor must have personnel distribute a handout to adjacent property owners stating:

(a) *that the contractor is performing work for the Commission*
(b) *the type of work to be performed*
(c) *the specific nights of the week, with dates, and the hours of work*
(d) *the contractor's Name and Phone Number to provide further information*

Coordinate with local municipalities and schedule short-term road closures so as not to impact civic or sport events.

Throughout the project duration, provide notifications to local residents, business owners, and the traveling public for any temporary inconveniences such as utility service interruptions, driveway construction, traffic interruptions, temporary and permanent road closures, detours, and other construction coordination as required.

COMMUNITY AWARENESS - Keep the Representative aware of all planned activities and specifically identify those that could have significant noise impact on the community due to close proximity of work to receptors.

Public Involvement

Upon approval of the draft version of the Final Design Noise Analysis (FDNA) Report by PTC, an extensive public involvement effort was initiated in order to accomplish the following:

1. Inform the public about the noise analysis process and their role in the process
2. Discuss the proposed highway improvements
3. Present the results of the FDNA to the public, including details related to noise levels, predicted noise impacts, and recommended noise abatement features
4. Answer questions and address concerns associated with noise-related issues
5. Present examples of typical noise barrier types and surface treatments
6. Determine the opinions of benefited receptors regarding their desires for the recommended noise barriers - documented via a "yes" or "no" vote on a survey form
7. Obtain public input associated with the type, color, and texture of recommended noise barriers
8. From a variety of barrier designs and concepts, solicit texture and color preferences of benefited property owners – documented via votes on a survey form

A coordination meeting with Bensalem Township and Bristol Township officials were held on January 11 and 24, 2023 respectively to explain the noise analyses, barrier options, and choices for barrier textures. For these meetings, invitations were sent via UPS (February 28, 2023) to addresses of benefited receptors in NSAs 7, 17, and 18. One public meeting was held virtually on March 22, 2023, with the property owners and renters in the NSAs 7, 17 and 18 communities to explain and discuss the noise analyses, barrier options, and choices for barrier textures. The primary purpose of these meetings was to provide attendees with detailed noise-related information relevant to their specific properties. For the meeting, invitations were sent via UPS (March 6, 2023) to addresses of benefited receptors in NSAs 7, 17 and 18. Reminder flyers were sent via UPS (March 17, 2023) to addresses of benefited receptors in NSAs 7, 17 and 18. The virtual public meeting featured a PowerPoint presentation, general questions and answers sessions.

The PowerPoint presentation reviewed the project noise study analysis and PTC noise analysis procedure. Then the survey method used to obtain public input was explained during the presentation. General questions were answered after the PowerPoint presentation. During the public meeting, available barrier options related to community-side textures and colors were shown as well as the noise barrier survey forms mailed to the benefited receptors (see Appendix C). The survey forms included questions related to the desire for a barrier (yes or no) and first and second choices related to community-side color and texture (see Appendix C). Attendees were informed of the date when completed survey forms were due back to PTC.

The results of the NSA 17 noise barrier survey reflect a response rate of 73 percent. Based on the voting forms received, seven of the benefited NSA 7 residences voted in favor of the noise barrier, a voting percentage of 88% (7 out of 8) in favor of the noise barrier. In addition, the residents selected the Dry Stacked Stone Brown, Dry Stacked Stone Beige, Double Rake Stucco Brown and Exposed Aggregate Gray textures as their first choice. Based on the benefited receptors response to the survey and a combined voting percentage of 88% in favor of the noise barrier, NSA 17 will have a noise barrier with the Exposed

Aggregate texture in Gray for the community side of the noise barrier. PTC decided and chose Split Face Random Ashlar Stone for the noise barrier facing the highway and it applies to all feasible and reasonable noise barriers throughout all NSAs within the project area. Summary of the voting results are included in Appendix C.

The results of the NSAs 18 and 7 noise barrier survey reflect a response rate of 48 percent. Based on the voting forms received, ten of the benefited NSAs 7 and 18 residences voted in favor of the noise barrier, a voting percentage of 91% (10 out of 11) in favor of the noise barrier. In addition, the residents selected the Ashlar Stone Beige, Ashlar Stone Tan, Dry Stacked Stone Brown, Dry stacked Stone Gray, Double Rake Stucco Brown, and Exposed Aggregate Gray textures as their first choice. Based on the benefited receptors response to the survey and a combined voting percentage of 91% in favor of the noise barrier, NSAs 18 and 7 will have a noise barrier with the Dry Stacked Stone texture in Gray for the community side of the noise barrier. Summary of the voting results are included in Appendix C.

Conclusion

Based on the analysis of noise reported herein, noise impacts exist within NSAs 7, 17 and 18. Based on the evaluation of the noise levels associated with the engineering plans developed to date, noise barriers were determined to be warranted feasible and reasonable for NSAs 7, 17 and 18. The Warranted, Feasible, and Reasonable Worksheets for NSAs 7, 17 and 18 recommended barriers are included in Appendix B.

Based on the analyses and public involvement activities, the PTC is committed to the construction of warranted, feasible, and reasonable highway traffic noise abatement measures for the identified noise-impacted sites within NSAs 7, 17 and 18. No federal or state funds are being used on the I-95/I-276 Section D30 Project. The PTC has discretion to implement abatement for this project under existing noise criteria, which shall have no implication on noise policy and procedures utilized on future Federal or State funded projects.

FIGURES

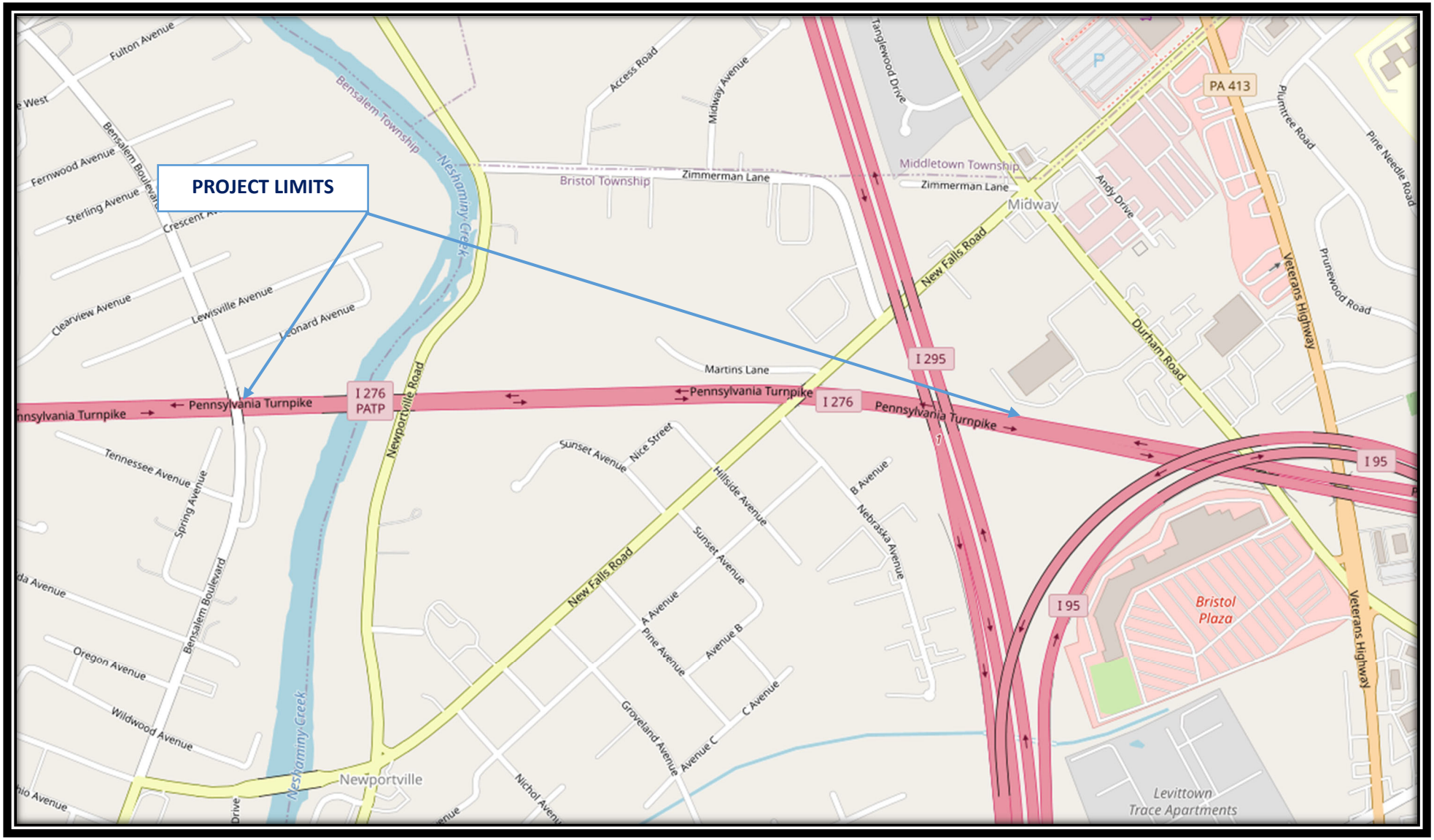
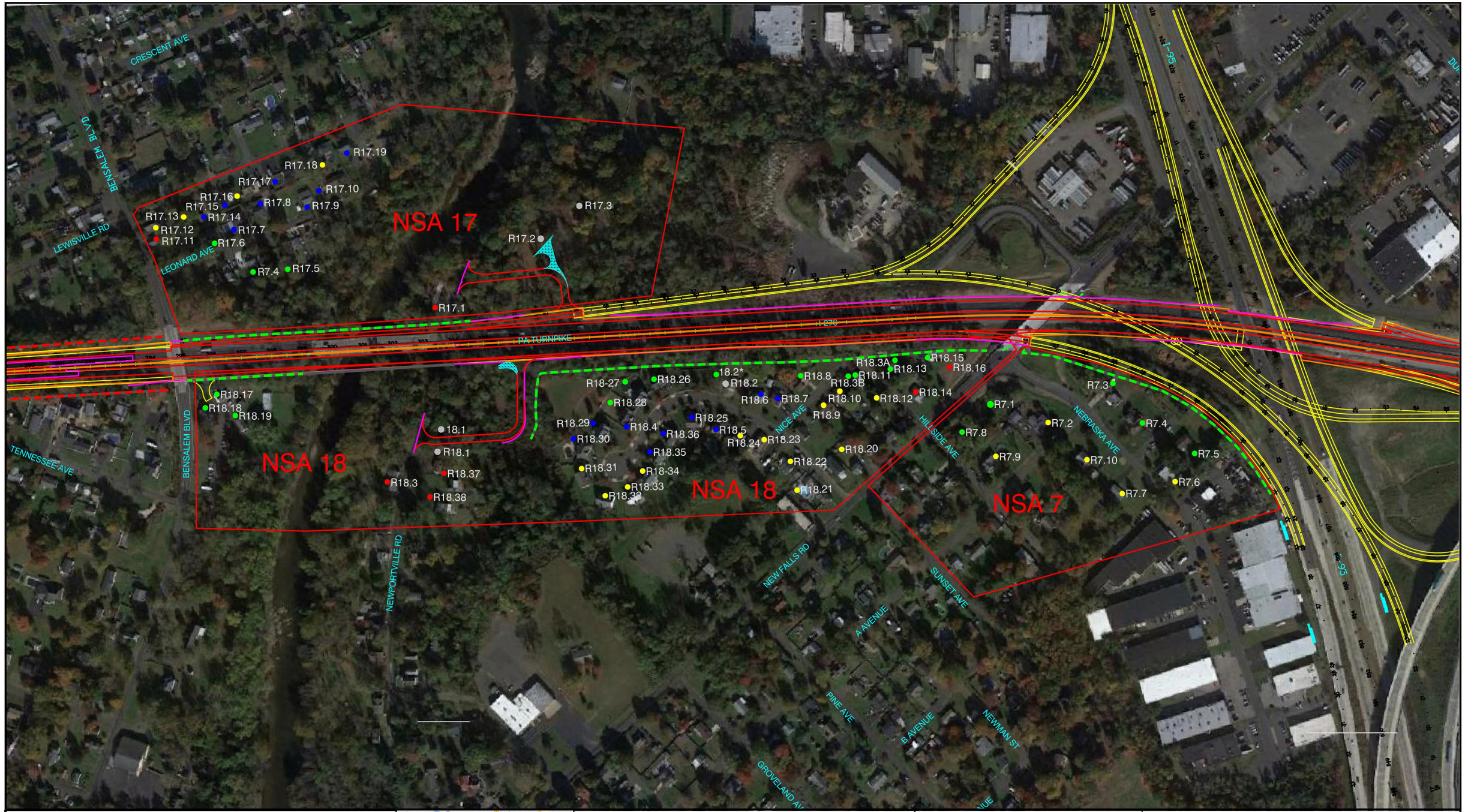


FIGURE 1
PROJECT LOCATION MAP
I-95/276 PA TURNPIKE INTERCHANGE
PENNSYLVANIA TURNPIKE COMMISSION
Bristol Township, Bucks County, PA



Noise Analysis Locations
- Impacted, Benefitted
- Impacted, Not Benefitted
- Not Impacted, Benefitted
- Not Impacted, Not Benefitted
- Potential Acquisition

Barriers
- Feasible and Reasonable
- Barrier constructed by others

I-95/276 (PA Turnpike Interchange)

Reconstruction Project

Pennsylvania Turnpike Commission

I-95 and I-276

Bristol Township, Bucks County, PA

N

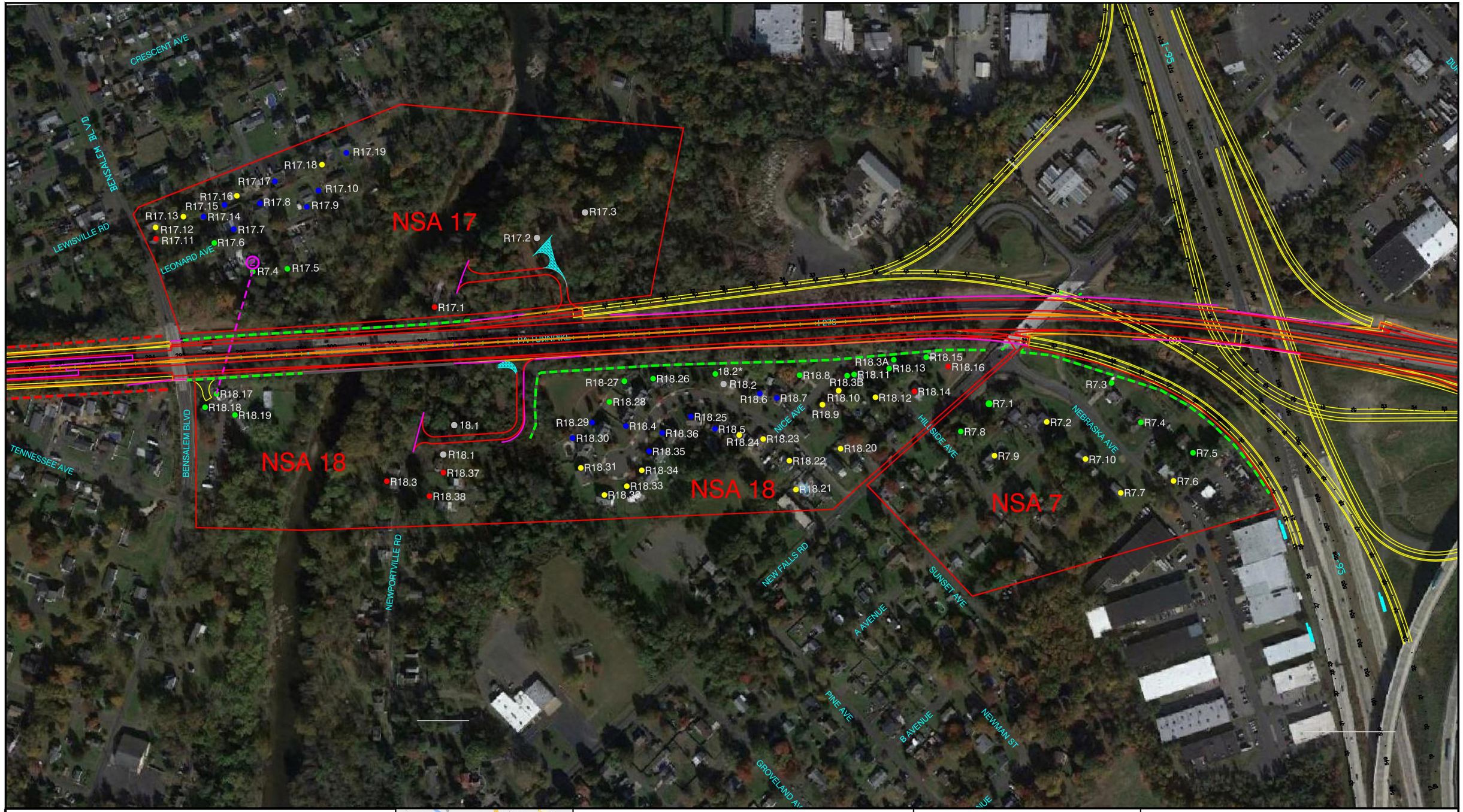
Scale (Feet)

200 100 0 200

Gannett Fleming

Figure 2: Barrier Analysis Results

Map Created on 11.14.22



Noise Analysis Locations
- Impacted, Benefitted
- Impacted, Not Benefitted
- Not Impacted, Benefitted Not
- Impacted, Not Benefitted
- Potential Acquisition

Barriers
- Feasible and Reasonable
- Barrier constructed by others
- Parallel Barrier Analysis

I-95/276 (PA Turnpike Interchange)

Reconstruction Project

Pennsylvania Turnpike Commission

I-95 and I-276

Bristol Township, Bucks County, PA

N

Scale (Feet)

200 100 0 200

Gannett Fleming

Figure 3: Parallel Barrier Analysis

Map Created on 11.14.22

TABLES

Table 1 Hourly Weighted Sound Levels dB(A) For Various Land Use Activity Categories*		
Land Use Activity Category	Leq(h)	Description of Land Use Activity Category
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A – D or F.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

* PennDOT has chosen to use Leq(h) [not L10(h)] on all of its transportation improvement projects.

Table 2. NSA 17
Preferred Alternative
Summary of Barrier Noise Analysis

NSA	Receiver ID	Land Use Activity Category	No. of Receptors	Existing Noise Level (2019)	Future No-Build Noise Level (2050)	Future Build Noise Level (2050)													
						Future Build No-Barrier		Case 1: 14' Barrier		Case 2: 16' Barrier		Case 3: 18' Barrier		Case 4: 20' Barrier		Case 5: 22' Barrier		Case 6: Smoothed Barrier	
						Noise Level dB(A)	I.O.E dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB
NSA 17	**R17.1***	B	1	66	68	68	2	67	1	67	1	67	1	67	1	67	1	67	1
	R17.4	B	1	65	67	68	3	62	6	62	7	61	7	61	7	61	8	61	7
	R17.5	B	1	65	67	68	3	61	7	60	8	60	8	60	8	60	8	60	7
	R17.6	B	1	63	65	66	3	61	5	61	5	60	5	60	5	60	6	61	5
	R17.7	B	1	62	64	65	3	60	5	60	5	59	5	59	6	59	6	60	5
	R17.8	B	1	59	61	62	3	57	6	56	6	56	6	56	6	56	6	57	5
	R17.9	B	1	61	63	64	2	57	6	57	7	57	7	57	7	57	7	58	6
	R17.10	B	1	60	62	62	2	56	7	55	7	55	7	55	7	55	7	56	6
	R17.11	B	1	65	66	66	1	64	2	64	2	64	2	64	2	64	2	64	2
	R17.12	B	1	64	64	64	1	62	2	62	2	62	2	62	3	62	3	62	3
	R17.13	B	1	61	62	62	1	61	2	60	2	60	2	60	2	60	2	60	2
	R17.14	B	1	59	61	61	2	57	5	57	5	56	5	56	5	56	5	56	5
	R17.15	B	1	58	59	60	3	55	5	55	5	55	5	55	5	54	6	55	5
	R17.16	B	1	56	58	59	3	56	4	55	4	55	4	55	4	55	4	56	3
	R17.17	B	1	59	61	62	3	55	6	55	7	55	7	55	7	54	7	55	7
	R17.18	B	1	53	54	55	3	53	3	52	3	52	3	52	3	52	3	54	1
	R17.19	B	1	58	60	61	3	54	7	54	7	54	7	54	7	54	7	56	6
FHWA TNM Results																			
Number of Impacted Receptors						5													
Feasibility Evaluation																			
Impacted Receptors receiving ≥ 5 dB Insertion Loss (I.L.)								3		3		3		3		3		3	
Percent of Impacted Receptors Receiving ≥ 5 dB I.L.								60%		60%		60%		60%		60%		60%	
Is this percentage ≥ 50%?; If yes, barrier is feasible.								**Yes**		**Yes**		**Yes**		**Yes**		**Yes**		**Yes**	
Reasonableness Evaluation																			
Number of Non-impacted receptors receiving ≥ 5 dB I.L. (Benefited Receptors)								8		8		8		8		8		8	
Total Number of receptors receiving ≥ 5 dB I.L. (Benefited Receptors)								11		11		11		11		11		11	
Number of receptors receiving ≥ 7 dB I.L. (Meeting NRDG)								3		6		6		6		6		3	
Does at least one Benefited Receptor Receive ≥ 7 dB I.L.?								**Yes**		**Yes**		**Yes**		**Yes**		**Yes**		**Yes**	
Barrier Height (feet)								14		16		18		20		22	14 to 24	17	
Barrier Length (feet)								1116		1116		1116		1116		1116		950	
Barrier square footage (SQft)								15489		16817		18135		19454		20733		16281	
Barrier square footage per benefited receptor (SF/BR)								1408		1529		1649		1769		1885		1480	
Is SF/BR ≤ 2,000?; If yes, barrier is reasonable								**Yes**		**Yes**		**Yes**		**Yes**		**Yes**		**Yes**	
Average I.L. per Benefited Receptor (dB)								6		6		6		7		7		6	

Impacted (66 dB(A) or 10 dB increase over existing)
Impacted Receivers receiving ≥ 5dB(A)
Non-Impacted Receivers receiving ≥ 5dB(A)

All noise levels are Leq(h) values and are A-weighted, expressed as dB(A)

With the exception of average insertion loss values, all noise levels were calculated to the tenth of a dB(A) and then rounded for presentation purposes.

*Receivers from previous 2006 noise study

Table 2A. NSA 17 Smoothed Top Barrier Profile

	X	Y	Z	Barrier Height	Top Barrier Elevation	Top Barrier Smoothed	Proposed Barrier Height
NSA 17	2,765,634.50	302,800.90	42.90	13.75	57	**57**	14
	2,765,584.00	302,796.00	42.50	13.75	56	**56**	14
	2,765,485.30	302,787.60	41.70	13.75	55	**56**	14
	2,765,386.00	302,781.20	42.02	13.75	56	**56**	14
	2,765,288.00	302,775.10	41.02	13.75	55	**55**	14
	2,765,185.80	302,769.50	39.99	13.75	54	**54**	14
	2,765,135.00	302,764.80	39.47	13.75	53	**53**	14
	2,765,129.00	302,764.50	39.41	16.25	56	**56**	17
	2,765,123.00	302,764.10	39.35	18.75	58	**58**	19
	2,765,117.00	302,763.80	39.29	18.75	58	**58**	19
	2,765,111.00	302,763.40	39.23	18.75	58	**58**	19
	2,765,099.00	302,763.30	38.99	24.25	63	**63**	24
	2,765,086.50	302,763.30	40.00	22.00	62	**62**	22
	2,764,986.80	302,757.30	38.00	22.00	60	**60**	22
	2,764,886.50	302,751.70	37.40	21.00	58	**58**	21
	2,764,774.80	302,743.70	37.40	20.00	57	**57**	20
	2,764,686.50	302,735.40	37.40	20.00	57	**57**	20

Table 3. NSAs 7 and 18
Preferred Alternative
Summary of Barrier Noise Analysis

NSA	Receiver ID	Land Use Activity Category	No. of Receptors	Existing Noise Level (2019)	Future No-Build Noise Level (2050)	Future Build Noise Level (2050)													
						Future Build No-Barrier		Case 1: 12' Barrier		Case 2: 14' Barrier		Case 3: 16' Barrier		Case 4: 18' Barrier		Case 5: 20' Barrier		Case 6: Smoothed Barrier	
						Noise Level dB(A)	I.O.E dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB
NSA 18	18.2*	B	1	66	68	69	3	62	7	61	8	60	9	60	9	59	10	60	9
	18.3A*	B	1	67	69	70	4	63	8	62	8	62	9	61	9	61	10	62	8
	18.3B*	B	1	63	65	66	3	62	5	61	5	61	6	60	6	60	7	61	5
	R18.3*	B	1	63	65	68	5	66	2	66	2	66	2	66	2	66	2	68	0
	R18.4*	B	1	59	60	63	5	57	6	56	7	56	7	55	8	55	8	56	7
	R18.5*	B	1	58	59	61	4	57	4	57	5	56	5	56	5	56	6	56	5
	R18.6*	B	1	60	61	63	4	59	4	59	5	58	5	58	6	57	6	58	5
	R18.7*	B	1	60	61	64	4	60	4	59	5	59	5	58	5	58	6	59	5
	R18.8*	B	1	62	64	66	4	61	5	60	5	60	6	59	6	59	7	60	6
	R18.9*	B	1	59	61	63	4	60	3	60	4	59	4	59	4	59	5	60	3
	R18.10*	B	1	61	63	65	4	61	4	60	4	60	5	60	5	59	5	60	4
	R18.11*	B	1	64	66	67	3	62	5	61	6	61	6	60	7	60	7	61	6
	R18.12*	B	1	62	63	65	3	62	3	62	3	62	3	61	4	61	4	62	3
	R18.13*	B	1	67	69	71	4	63	8	62	9	62	9	61	10	61	10	63	8
	R18.14*	B	1	63	65	66	3	65	1	65	1	65	1	65	2	65	2	65	1
	R18.15*	B	1	72	74	75	4	62	13	62	14	61	14	61	14	61	15	62	14
	R18.16*	B	1	68	70	72	4	67	4	67	4	67	5	67	5	67	5	67	4
	R18.17*	B	1	72	74	76	4	70	6	69	7	69	7	69	8	68	8	69	7
	R18.18*	B	1	70	71	74	4	69	5	68	5	68	6	68	6	68	6	69	5
	R18.19*	B	1	68	70	72	3	65	7	64	7	64	8	64	8	64	8	66	5
	R18.20	B	1	60	61	63	3	63	0	63	0	63	0	63	1	63	1	63	0
	R18.21	B	1	59	59	62	3	60	2	60	2	60	2	60	2	60	2	60	2
	R18.22	B	1	58	59	61	3	59	3	59	3	58	3	58	3	58	3	59	3
	R18.23	B	1	58	60	62	4	59	3	58	4	58	4	58	5	57	5	58	4
	R18.24	B	1	59	60	62	4	59	4	58	4	58	5	57	5	57	5	58	4
	R18.25	B	1	59	61	63	4	58	5	58	6	57	6	57	7	56	7	57	6
	R18.26	B	1	67	69	70	3	63	7	62	8	61	9	60	10	60	10	60	10
	R18.27	B	1	66	68	68	2	60	9	59	9	59	10	58	10	57	11	60	8
	R18.28	B	1	62	63	66	4	58	8	58	8	57	9	56	9	56	10	58	8
	R18.29	B	1	60	62	65	5	57	8	57	8	56	9	56	9	55	10	57	9
	R18.30	B	1	59	61	65	5	57	8	56	8	56	9	56	9	55	9	55	9
	R18.31	B	1	59	60	63	5	59	5	58	5	58	5	58	6	58	6	60	3
	R18.32	B	1	57	59	62	4	58	4	57	4	57	4	57	5	57	5	59	2
	R18.33	B	1	57	59	61	4	57	4	57	4	57	4	57	4	56	5	58	3
	R18.34	B	1	57	59	61	4	57	4	57	4	57	5	56	5	56	5	57	4
	R18.35	B	1	58	60	62	4	57	5	56	6	56	6	56	6	55	7	56	6
	R18.36	B	1	58	60	63	4	58	5	57	6	56	6	56	7	56	7	57	6
	R18.37	B	1	64	65	67	4	64	3	64	3	64	3	64	3	64	3	68	-1
	R18.38	B	1	64	65	67	3	64	3	64	3	64	3	64	3	64	3	67	0

Table 3. NSAs 7 and 18
Preferred Alternative
Summary of Barrier Noise Analysis

NSA	Receiver ID	Land Use Activity Category	No. of Receptors	Existing Noise Level (2019)	Future No-Build Noise Level (2050)	Future Build Noise Level (2050)											
						Future Build No-Barrier		Case 1: 12' Barrier		Case 2: 14' Barrier		Case 3: 16' Barrier		Case 4: 18' Barrier		Case 5: 20' Barrier		Case 6: Smoothed Barrier	
						Noise Level dB(A)	I.O.E dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB	Noise Level dB(A)	Insertion Loss dB
NSA 7	**R7.1***	B	1	66	66	69	3	64	5	64	5	64	5	64	5	64	5	64	5
	R7.2*	B	1	63	64	65	2	62	3	62	4	61	4	60	5	60	5	62	3
	R7.3*	B	1	68	69	72	4	62	9	61	11	60	12	60	12	60	12	62	9
	R7.4*	B	1	64	66	67	3	61	6	61	6	60	7	60	7	60	7	61	6
	R7.5*	B	1	64	65	66	2	61	5	60	6	60	6	60	7	60	7	61	5
	R7.6	B	1	63	63	64	1	60	4	60	4	59	5	59	5	59	5	60	4
	R7.7	B	1	61	62	62	1	60	2	59	3	59	4	58	4	58	4	60	2
	R7.8	B	1	65	66	68	3	63	5	63	5	63	5	63	5	63	5	63	5
	R7.9	B	1	60	61	63	2	60	2	60	3	60	3	59	3	59	3	60	2
	R7.10	B	1	61	62	63	2	61	2	60	3	59	4	59	5	59	5	61	2
FHWA TNM Results																			
Number of Impacted Receptors						23													
Feasibility Evaluation																			
Impacted Receptors receiving ≥ 5 dB Insertion Loss (I.L.)									18		18		19		19		19		18
Percent of Impacted Receptors Receiving ≥ 5 dB I.L.									78%		78%		83%		83%		83%		78%
Is this percentage ≥ 50%?; If yes, barrier is feasible.									**Yes**		**Yes**		**Yes**		**Yes**		**Yes**		**Yes**
Reasonableness Evaluation																			
Number of Non-impacted receptors receiving ≥ 5 dB I.L. (Benefited Receptors)									7		10		14		17		19		9
Total Number of receptors receiving ≥ 5 dB I.L. (Benefited Receptors)									25		28		33		36		38		27
Number of receptors receiving ≥ 7 dB I.L. (Meeting NRDG)									9		13		15		18		21		11
Does at least one Benefited Receptor Receive ≥ 7 dB I.L.?									**Yes**		**Yes**		**Yes**		**Yes**		**Yes**		**Yes**
Barrier Height (feet)									12		14		16		18		20	12 to 18	15
Barrier Length (feet)									3732		3732		3732		3732		3732		3065
Barrier square footage (SQft)									45659		52122		58582		65044		69538		44782
Barrier square footage per benefited receptor (SF/BR)									1826		1862		1775		1807		1830		1659
Is SF/BR ≤ 2,000?; If yes, barrier is reasonable									**Yes**		**Yes**		**Yes**		**Yes**		**Yes**		**Yes**
Average I.L. per Benefited Receptor (dB)									7		7		7		7		7		7

Impacted (66 dB(A) or 10 dB increase over existing)
Impacted Receivers receiving ≥ 5dB(A)
Non-Impacted Receivers receiving ≥ 5dB(A)

All noise levels are Leq(h) values and are A-weighted, expressed as dB(A)

With the exception of average insertion loss values, all noise levels were calculated to the tenth of a dB(A) and then rounded for presentation purposes.

*Receivers from previous 2006 noise study

Table 3A. NSA 18 Smoothed Top Barrier Profile

	X	Y	Z	Barrier Height	Top Barrier Elevation	Top Barrier Smoothed	Proposed Barrier Height
NSA 18	2,764,700.30	302,601.70	37.20	16.00	53	**53**	16
	2,764,784.00	302,606.80	37.40	16.00	53	**53**	16
	2,764,885.50	302,613.30	38.00	16.00	54	**54**	16
	2,764,983.50	302,619.30	38.80	16.00	55	**55**	16
	2,765,081.80	302,624.30	39.50	16.00	56	**56**	17

NSA 18	2,765,834.00	302,409.10	65.27	16.00	81	**81**	16
	2,765,852.50	302,453.30	66.14	16.00	82	**82**	16
	2,765,849.50	302,513.20	67.78	16.00	84	**83**	15
	2,765,852.50	302,572.80	70.00	16.00	86	**84**	14
	2,765,859.00	302,619.70	69.34	16.00	85	**84**	15
	2,765,868.80	302,626.60	69.60	16.00	86	**84**	14
	2,765,929.50	302,630.40	70.38	16.00	86	**84**	14
	2,766,001.30	302,634.80	70.43	18.00	88	**84**	14
	2,766,073.00	302,639.20	68.52	18.00	87	**84**	15
	2,766,145.00	302,643.70	66.21	18.00	84	**84**	18
	2,766,193.00	302,646.60	64.11	18.00	82	**85**	21
	2,766,240.80	302,649.60	66.86	18.00	85	**87**	20
	2,766,300.80	302,652.50	67.81	18.00	86	**88**	20
	2,766,360.80	302,654.20	72.62	18.00	91	**88**	15
	2,766,420.50	302,656.00	76.29	18.00	94	**88**	12
	2,766,480.50	302,657.70	77.37	14.00	91	**88**	11
	2,766,540.50	302,659.40	78.21	16.00	94	**90**	12
	2,766,600.50	302,661.20	78.24	16.00	94	**92**	14
	2,766,660.50	302,662.90	78.22	16.00	94	**92**	14
	2,766,720.50	302,664.60	77.57	16.00	94	**90**	12
	2,766,780.50	302,666.40	78.00	14.00	92	**90**	12
	2,766,840.50	302,669.60	77.42	14.00	91	**88**	11
	2,766,900.00	302,674.90	77.15	14.00	91	**86**	9
	2,766,960.00	302,680.20	75.41	14.00	89	**84**	9
	2,767,019.80	302,685.50	74.72	14.00	89	**84**	9
	2,767,079.50	302,690.80	74.20	14.00	88	**84**	10
	2,767,139.30	302,696.10	73.26	14.00	87	**84**	11
	2,767,199.00	302,701.40	71.76	14.00	86	**85**	13
	2,767,259.00	302,701.80	71.08	14.00	85	**86**	15
	2,767,307.00	302,701.20	70.66	14.00	85	**87**	16
	2,767,338.30	302,700.80	70.14	14.00	84	**88**	18

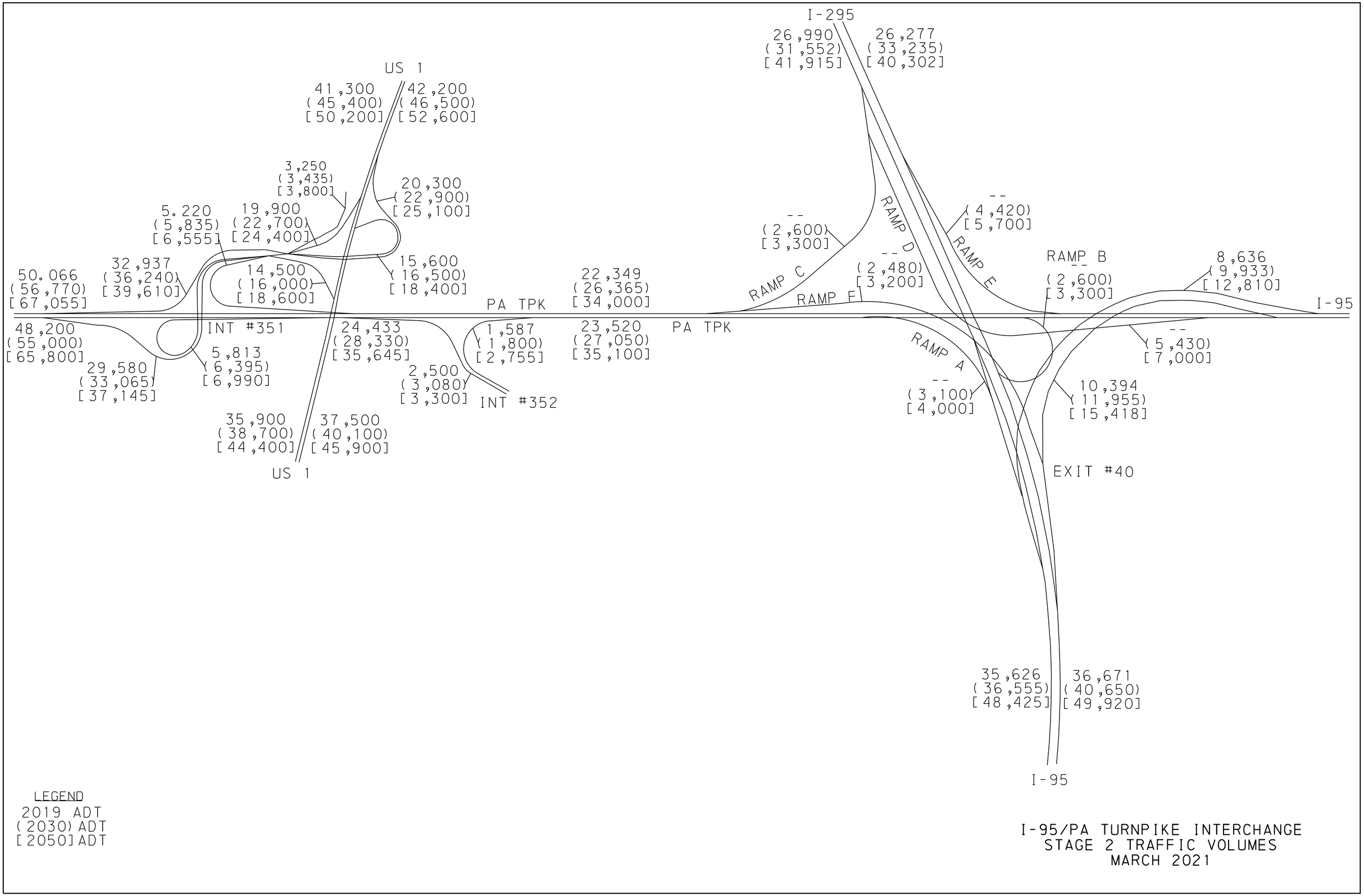
Table 3B. NSA 18 Smoothed Top Barrier Profile

	X	Y	Z	Barrier Height	Top Barrier Elevation	Top Barrier Smoothed	Proposed Barrier Height
NSA 7	2,767,454.00	302,694.60	70	12	82	**82**	12
	2,767,552.00	302,684.50	68	12	80	**82**	14
	2,767,636.50	302,657.90	68	12	80	**82**	14
	2,767,733.30	302,626.80	68	12	80	**82**	14
	2,767,817.80	302,600.90	67	12	79	**82**	15
	2,767,917.80	302,568.20	70.7	12	83	**84**	13
	2,768,007.30	302,518.30	73.6	12	86	**86**	12
	2,768,087.30	302,456.50	76.3	12	88	**88**	12
	2,768,159.80	302,388.00	77.7	12	90	**90**	12
	2,768,223.00	302,308.80	77.8	12	90	**90**	12
	2,768,275.80	302,226.90	76.9	12	89	**90**	13

Table 4. NSAs 17 and 18
Summary of Parallel Barrier Analysis

Cross Section Number	Closest Receptors		Barrier Height			Barrier Separation	Ratio of Width to Height
	NSA 17	NSA 18	NSA 17	NSA 18	Average		
1	R17-4	R18-17	22	16	19	138.4	7.3 : 1

Appendix A



LEGEND
2019 ADT
(2030) ADT
[2050] ADT

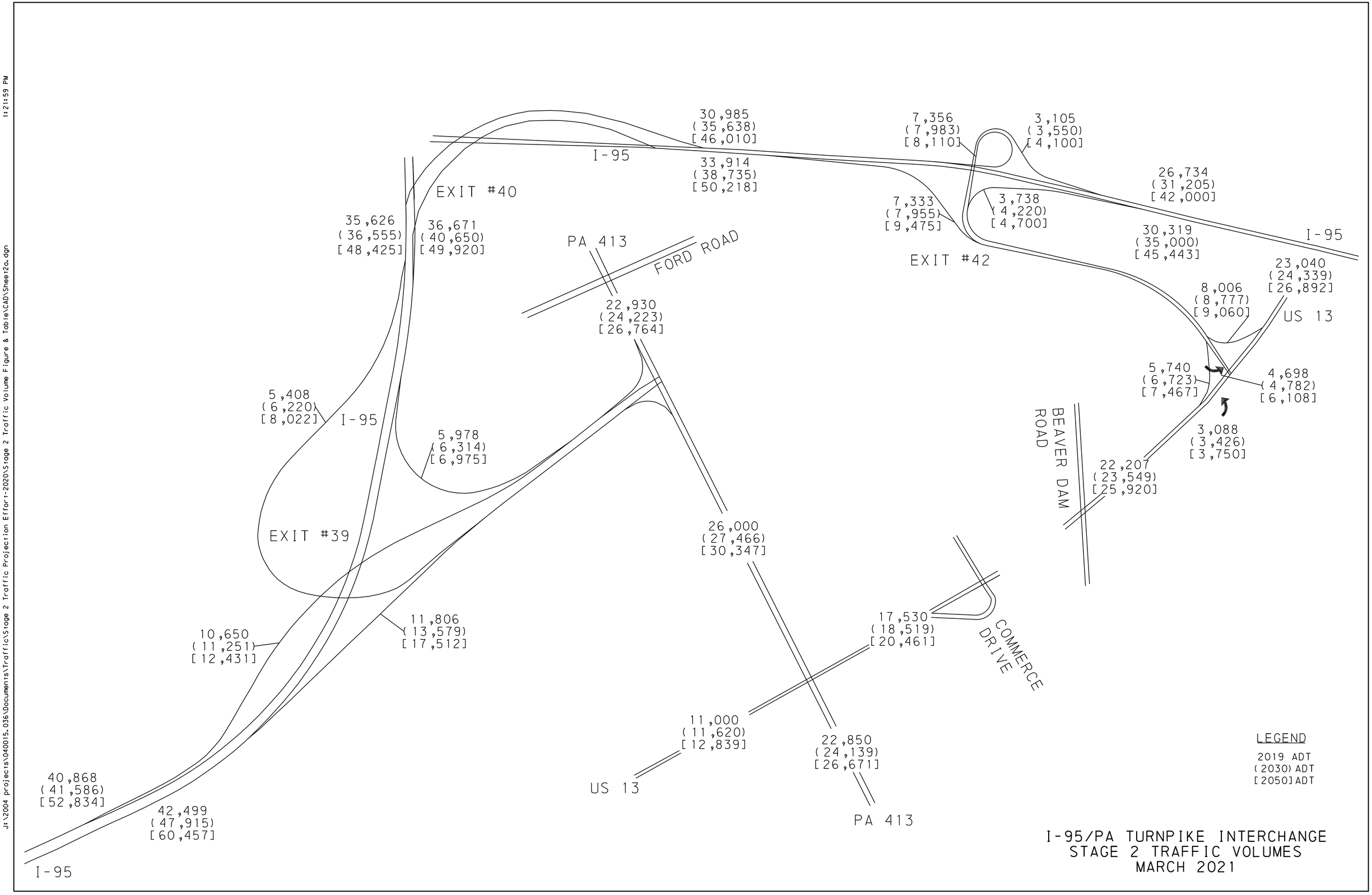
I-95/PA TURNPIKE INTERCHANGE
STAGE 2 TRAFFIC VOLUMES
MARCH 2021

3/18/2021
1:22:53 PM

J:\2004 projects\040015.036\Documents\Traffic\Stage 2 Traffic Projection Effort-2020\Stage 2 Traffic Volume Figure & Table\CAD\Sheet1a.dgn

3/22/2021
1:21:59 PM

J:\2004 projects\040015.036\Documents\Traffic\Stage 2 Traffic Projection Effort-2020\Stage 2 Traffic Volume Figure & Table\CAD\Sheet2a.dgn



LEGEND

2019 ADT
(2030) ADT
[2050] ADT

I-95/PA TURNPIKE INTERCHANGE
STAGE 2 TRAFFIC VOLUMES
MARCH 2021

PA Tpk/I-95 Interchange Stage 2 Traffic Volumes	Existing (2019) ADT	Build Year (2030) ADT	Design Year (2050) ADT	K-Factor	Heavy Vehicle %
PA Turnpike Mainline					
EB - Int #343 to Int #351	48,200	55,000	65,800	9%	9%
WB - Int #343 to Int #351	50,066	56,770	67,055	9%	17%
EB - Int #351 to #352	24,433	28,330	35,645	8%	9%
EB - Int #352 to Int #353	23,520	27,050	35,100	8%	9%
WB - Int #352 to Int #353	22,349	26,365	34,000	8%	15%
I-95 Mainline					
NB - PA Turnpike (Exit #40) to Exit #42	33,914	38,735	50,218	8%	12%
SB - PA Turnpike (Exit #40) to Exit #42	30,985	35,638	46,010	8%	15%
NB - Exit #42 to Exit #43	30,319	35,000	45,443	8%	12%
SB - Exit #42 to Exit #43	26,734	31,205	42,000	8%	15%
PA Turnpike Int #351 Ramps					
PA Turnpike WB Off Ramp to Int #351	5,220	5,835	6,555		
PA Turnpike EB Off Ramp to Int #351	29,580	33,065	37,145		
PA Turnpike EB On Ramp from Int #351	5,813	6,395	6,990		
PA Turnpike WB On Ramp from Int #351	32,937	36,240	39,610		
PA Turnpike Int #352 Ramps					
PA Turnpike EB Off Ramp to Int #352	2,500	3,080	3,300		
PA Turnpike EB On Ramp from Int #352	1,587	1,800	2,755		
I-95 Exit #42 Ramps					
I-95 NB Off Ramp to Exit #42	7,333	7,955	9,475		
I-95 SB Off Ramp to Exit #42	3,105	3,550	4,100		
I-95 SB On Ramp from Exit #42	7,356	7,983	8,110		
I-95 NB On Ramp from Exit #42	3,738	4,220	4,700		
I-95 / Turnpike Ramps					
I-95 SB (NJ to Phila)	8,636	9,933	12,810		
I-95 NB (Phila to NJ)	10,394	11,955	15,418		
I-95 SB to I-295 EB (Ramp E)	--	4,420	5,700		
I-295 WB to PA Turnpike WB (Ramp C)	--	2,600	3,300		
PA Turnpike EB to I-95 SB (Ramp A)	--	3,100	4,000		
PA Turnpike EB to I-295 EB (Ramp B)	--	2,600	3,300		
I-95 NB to PA Turnpike WB (Ramp F)	--	2,480	3,200		
I-295 WB to I-95 NB (Ramp D)	--	5,430	7,000		
US 1					
SB - PA Turnpike to Rockhill Dr	41,300	45,400	50,200	8%	8%
NB - PA Turnpike to Rockhill Dr	42,200	46,500	52,600	8%	5%
SB - Street Rd Int to PA Turnpike	35,900	38,700	44,400	7%	6%
NB - Street Rd Int to PA Turnpike	37,500	40,100	45,900	7%	8%
PA Turnpike Int #351					
US 1 SB On Ramp	14,500	16,000	18,600	10%	8%
US 1 SB Off Ramp	19,900	22,700	24,400	10%	7%
Horizon Blvd	3,250	3,435	3,800	--	--
US 1 NB Off Ramp	15,600	16,500	18,400	10%	7%
US 1 NB On Ramp	20,300	22,900	25,100	10%	7%

PA Tpk/I-95 Interchange Stage 2 Traffic Volumes	Existing (2019) ADT	Build Year (2030) ADT	Design Year (2050) ADT	K-Factor	Heavy Vehicle %
I-295 / I-95					
I-295 WB - NJ to PA Turnpike	26,990	31,552	41,915	9%	1%
I-295 EB - PA Turnpike to NJ	26,277	33,235	40,302	9%	7%
I-95 NB - Exit #39 to Exit #40	36,671	40,650	49,920	8%	15%
I-95 SB - Exit #40 to Exit #39	35,626	36,555	48,425	8%	14%
I-95 SB - Exit #39 to Philadelphia	40,868	41,586	52,834	8%	20%
I-95 NB - Philadelphia to Exit #39	42,499	47,915	60,457	8%	19%
I-95 Exit #39					
I-95 SB Exit #39 Off Ramp	5,408	6,220	8,022	9%	6%
I-95 NB Exit #39 Off Ramp	11,806	13,579	17,512	9%	4%
PA 413 to I-95 NB On Ramp	5,978	6,314	6,975	9%	9%
PA 413 to I-95 SB On Ramp	10,650	11,251	12,431	9%	7%
PA 413					
North of intersection with I-95	22,930	24,223	26,764	7%	8%
South of intersection with I-95	26,000	27,466	30,347	7%	8%
US 13 & PA 413					
US 13 South of PA 413	11,000	11,620	12,839	8%	8%
US 13 North of PA 413	17,530	18,519	20,461	7%	13%
PA 413 South of US 13	22,850	24,139	26,671	10%	10%
I-95 Exit #42					
US 13 South of Exit #42	22,207	23,459	25,920	8%	8%
US 13 North of Exit #42	23,040	24,339	26,892	8%	11%
US 13 NB to I-95 On Ramp	3,088	3,426	3,750	10%	25%
US 13 SB to I-95 On Ramp	8,006	8,777	9,060	10%	8%
I-95 Off Ramp to US 13 SB	5,740	6,723	7,467	10%	8%
I-95 Off Ramp to US 13 NB	4,698	4,782	6,108	10%	25%

Appendix B

Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet – Noise Wall

Date June 3, 2022
Project Name I-95/I-276 Interchange Sec. D30
County Bucks
SR, Section
Community Name and/or NSA # NSA 17
Noise Wall Identification (i.e., Wall 1) NSA 17

General

1. Type of project (new location, reconstruction, etc.): Reconstrcution

2. Total number of impacted receptor units in community
   - Category A units impacted: 0
   - Category B units impacted: 5
   - Category C units impacted: 0
   - Category D units impacted (if interior analysis required): 0
   - Category E units impacted: 0

Warranted

1. Community Documentation
   a. Date community was permitted (for new developments or developments planned for or under construction): N/A
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2001
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of *CE, ROD, or FONSI, as appropriate*." ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement (note N/A if category is not impacted or present or analysis not required). A "yes" answer to any of the following three questions requires the consideration of noise abatement.
   a. With the proposed project, are design year noise levels predicted to approach or exceed the NAC level(s) in Table 1? ☑ Yes ☐ No
   b. With the proposed project, is there predicted to be a substantial design year noise level increase of 10 dB(A) or more at Activity Category A, B, C, D, or E receptor(s)? ☐ Yes ☑ No

c. With the proposed project, are design year noise levels predicted to be less than existing noise levels, but still approach or exceed the NAC levels in Table 1 for the relevant Activity Category? ☐ Yes ☑ No

Feasibility – Questions 1c through 7 must all be answered "yes" for a noise barrier to be determined to be feasible.

1. Impacted receptor units
   a. Total number of impacted receptor units: 5
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 60%
   c. Is the percentage 50 or greater? ☑ Yes ☐ No
2. Can the noise wall be designed and physically constructed at the proposed location? ☑ Yes ☐ No
3. Can the noise wall be constructed without causing a safety problem? ☑ Yes ☐ No
4. Can the noise wall be constructed without restricting access to vehicular or pedestrian travel? ☑ Yes ☐ No
5. Can the noise wall be constructed in a manner that allows for access for required maintenance and inspection operations? ☑ Yes ☐ No
6. Can the noise wall be constructed in a manner that permits utilities to function in a normal manner? ☑ Yes ☐ No
7. Can the noise wall be constructed in a manner that permits drainage features to function in a normal manner? ☑ Yes ☐ No

Reasonableness

1. Community Desires Related to the Barrier
   a. Do at least 50 percent of the responding benefited receptor unit owner(s) and renters desire the noise wall? If yes, continue with Reasonableness questions. If no, the noise wall can be considered not to be reasonable. Proceed to "Decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the benefited receptor unit owners do not desire the noise wall." ☑ Yes ☐ No

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall 16,281
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss) 11
   c. SF/BR = 2a/2b 1,480
   d. Is 2c less than or equal to the MaxSF/BR value of 2000? ☑ Yes ☐ No

3. Noise Reduction Design Goals (Activity Categories A, B, C, and E) A "yes" answer is required to Question 3a. for the noise wall to be determined to be reasonable. Questions 3b through 3e represent desirable goals that need not be met for a noise wall to be determined reasonable. However, they must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does the noise wall reduce design year exterior_noise levels by at least 7 dB(A) for at least one benefited receptor? ☑ Yes ☐ No

   b. Does the noise wall provide an insertion loss of at least 7 dB(A) for more receptors than required under 3a.while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☑ Yes ☐ No

   c. Does the noise wall provide insertion losses of greater than 7 dB(A) while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☑ Yes ☐ No

   d. Does the noise wall reduce future exterior levels to the low-60-decibel range (60-63) for Category B and C receptors and the upper-60 dB(A) range (65-68) for Category E receptors? ☑ Yes ☐ No

   e. Does the noise wall reduce design year noise levels back to existing levels? ☑ Yes ☐ No

4. Noise Reduction Design Goals (Activity Category D) A "yes" answer is required to Question 4a. for the barrier to be determined to be reasonable. Question 4b represents a desirable goal that need not be met for a noise wall to be determined reasonable. However, this goal must be addressed and should be considered in the determination of the recommended noise wall.

   a. Does noise wall reduce design year interior_noise levels by at least 7 dB(A) for the facility's analysis point? ☐ Yes ☐ No

   b. While conforming to the MaxSF/BR criteria and justified by a "point of diminishing returns' evaluation, does the noise wall provide an interior insertion loss above the 7 dB(A) minimum ☐ Yes ☐ No

Decision

Is the Noise Wall WARRANTED? ☑ Yes ☐ No

Is the Noise Wall FEASIBLE? ☑ Yes ☐ No

Is the Noise Wall REASONABLE? ☑ Yes ☐ No

Additional Reasons for Decision:

Responsible/Qualified Individuals Making the Above Decisions

_____ Date:_____
PennDOT, Engineering District Environmental Manager

Ahmed El-Aassar, Vice President, Gannett Fleming Date: 1/18/2023
Qualified Professional Performing the Analysis
(name, title, and company name)

Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet – Noise Wall

Date: June 3, 2022
Project Name: I-95/I-276 Interchange Sec. D30
County: Bucks
SR, Section:
Community Name and/or NSA #: 7 and 18
Noise Wall Identification (i.e., Wall 1): 7 and 18

General

1. Type of project (new location, reconstruction, etc.): Reconstruction

2. Total number of impacted receptor units in community
   - Category A units impacted: 0
   - Category B units impacted: 23
   - Category C units impacted: 0
   - Category D units impacted (if interior analysis required): 0
   - Category E units impacted: 0

Warranted

1. Community Documentation
   a. Date community was permitted (for new developments or developments planned for or under construction): N/A
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2001
   c. Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of *CE, ROD, or FONSI, as appropriate*." ☑ Yes ☐ No

2. Criteria requiring consideration of noise abatement (note N/A if category is not impacted or present or analysis not required). A "yes" answer to any of the following three questions requires the consideration of noise abatement.
   a. With the proposed project, are design year noise levels predicted to approach or exceed the NAC level(s) in Table 1? ☑ Yes ☐ No
   b. With the proposed project, is there predicted to be a substantial design year noise level increase of 10 dB(A) or more at Activity Category A, B, C, D, or E receptor(s)? ☐ Yes ☑ No

c. With the proposed project, are design year noise levels predicted to be less than existing noise levels, but still approach or exceed the NAC levels in Table 1 for the relevant Activity Category? ☐ Yes ☑ No

Feasibility – Questions 1c through 7 must all be answered "yes" for a noise barrier to be determined to be feasible.

1. Impacted receptor units
   a. Total number of impacted receptor units: 23
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 78%
   c. Is the percentage 50 or greater? ☑ Yes ☐ No
2. Can the noise wall be designed and physically constructed at the proposed location? ☑ Yes ☐ No
3. Can the noise wall be constructed without causing a safety problem? ☑ Yes ☐ No
4. Can the noise wall be constructed without restricting access to vehicular or pedestrian travel? ☑ Yes ☐ No
5. Can the noise wall be constructed in a manner that allows for access for required maintenance and inspection operations? ☑ Yes ☐ No
6. Can the noise wall be constructed in a manner that permits utilities to function in a normal manner? ☑ Yes ☐ No
7. Can the noise wall be constructed in a manner that permits drainage features to function in a normal manner? ☑ Yes ☐ No

Reasonableness

1. Community Desires Related to the Barrier
   a. Do at least 50 percent of the responding benefited receptor unit owner(s) and renters desire the noise wall? If yes, continue with Reasonableness questions. If no, the noise wall can be considered not to be reasonable. Proceed to "Decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the benefited receptor unit owners do not desire the noise wall." ☒ Yes ☐ No

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall 44,782
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss) 27
   c. SF/BR = 2a/2b 1,659
   d. Is 2c less than or equal to the MaxSF/BR value of 2000? ☑ Yes ☐ No

3. Noise Reduction Design Goals (Activity Categories A, B, C, and E) A "yes" answer is required to Question 3a. for the noise wall to be determined to be reasonable. Questions 3b through 3e represent desirable goals that need not be met for a noise wall to be determined reasonable. However, they must be addressed and should be considered in the determination of the recommended noise wall.
   a. Does the noise wall reduce design year exterior_noise levels by at least 7 dB(A) for at least one benefited receptor? ☑ Yes ☐ No
   b. Does the noise wall provide an insertion loss of at least 7 dB(A) for more receptors than required under 3a.while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☑ Yes ☐ No
   c. Does the noise wall provide insertion losses of greater than 7 dB(A) while still conforming to the MaxSF/BR value of 2,000 and a "point of diminishing returns" evaluation? ☑ Yes ☐ No
   d. Does the noise wall reduce future exterior levels to the low-60-decibel range (60-63) for Category B and C receptors and the upper-60 dB(A) range (65-68) for Category E receptors? ☑ Yes ☐ No
   e. Does the noise wall reduce design year noise levels back to existing levels? ☑ Yes ☐ No

4. Noise Reduction Design Goals (Activity Category D) A "yes" answer is required to Question 4a. for the barrier to be determined to be reasonable. Question 4b represents a desirable goal that need not be met for a noise wall to be determined reasonable. However, this goal must be addressed and should be considered in the determination of the recommended noise wall.
   a. Does noise wall reduce design year interior_noise levels by at least 7 dB(A) for the facility's analysis point? ☐ Yes ☐ No
   b. While conforming to the MaxSF/BR criteria and justified by a "point of diminishing returns' evaluation, does the noise wall provide an interior insertion loss above the 7 dB(A) minimum ☐ Yes ☐ No

Decision

Is the Noise Wall WARRANTED? ☑ Yes ☐ No

Is the Noise Wall FEASIBLE? ☑ Yes ☐ No

Is the Noise Wall REASONABLE? ☑ Yes ☐ No

Additional Reasons for Decision:

Responsible/Qualified Individuals Making the Above Decisions

_____ Date:_____
PennDOT, Engineering District Environmental Manager

Ahmed El-Aassar, Vice President, Gannett Fleming Date: 1/18/2023
Qualified Professional Performing the Analysis
(name, title, and company name)

Appendix C

HOW ARE NOISE STUDIES DONE?

There is a specific process that PTC uses to identify locations that can be considered for noise barriers and to determine whether noise barriers can be built within state and federal guidelines. This process includes the following steps.

1. Identify land uses most sensitive to noise, such as homes and parks, to define Noise Sensitive Areas.
2. Measure the existing noise levels.
3. Evaluate (model) the future noise levels with the highway project constructed.
4. Determine whether a noise barrier meets state and federal guidelines.

HOW TO VOTE

1. Complete the noise ballot that was included in this newsletter.
2. Only one vote is allowed per property owner. For rental properties, one vote is allowed per rental unit, and one vote is allowed for the property owner.
3. Answer Questions 1 through 4. Please sign in the space provided next to Question #1 or #2 as proof that you own or rent the property this newsletter was mailed to.
4. List any comments, questions, or concerns in the space provided on the back of the voting ballot.
5. Return the ballot in the postage paid envelope included in the newsletter.

QUESTIONS OR COMMENTS?

Thank you in advance for your participation. If you have any questions or comments, please contact:

Mark F. Raup, PE
Senior Engineer Project Manager
Pennsylvania Turnpike Commission
700 S Eisenhower Blvd
Middletown, PA 17057

Email: mraup@paturnpike.com

OR

PA Turnpike/I-95 Interchange Project Office
5 Neshaminy Interplex
Hilton Drive, Suite 205
Trevose, PA 19053

Phone: 215.355.3577
Email: patrick.kelly@jacobs.com

PA TURNPIKE/I-95 INTERCHANGE PROJECT SECTION D30

NOISE UPDATE

FEBRUARY 28, 2023

Dear Property Owner/Renter:

The Pennsylvania Turnpike Commission (PTC) is the lead agency on the PA Turnpike/I-95 Interchange Project. The project, once completed, will fully connect the PA Turnpike (I-276) and I-95/I-295 in Bristol Township, Bucks County. The project has been divided into various stages of design and construction. This newsletter is specific to construction activities associated with Section D30. A project description and a map of Section D30 are included with this newsletter.

In addition to this information, **a virtual meeting to discuss the noise analysis will occur on March 22, 2023**. If you would like to join the virtual meeting by computer, please RSVP to patrick.kelly@jacobs.com and the meeting link will be sent you. If you are unable to access a virtual meeting, please indicate such in your RSVP response, and accommodations will be made for you. The meeting will give an overview of the project, the noise analysis that was done, and will discuss the proposed noise barrier locations and proposed noise barrier options.

A Noise Study was done for the project. The Noise Study determined that a noise barrier could be installed for Noise Sensitive Areas (NSAs). The location of these NSAs are shown on a map with this newsletter. The proposed barriers will range in height from 9 to 20 feet high.

Per PTC and Federal Highway Administration guidelines, all property owners and renters that receive a benefit from the noise barrier can vote to say whether they want a noise barrier constructed. You are receiving this information because you are eligible to vote on the proposed noise barrier. We are also interested in your opinion about what the noise barrier looks like. Please review this information and complete your ballot by March 31, 2023. A postage paid envelope is enclosed for mailing the ballot to PTC's local project office. **All ballots must be postmarked by March 31, 2023** to be included in the vote tally.

In order for the noise barrier to be built, 50% or more of the votes received from property owners and renters must be in favor of the noise barrier. The votes will also be used to help decide the appearance of the neighborhood-facing side of the barrier.

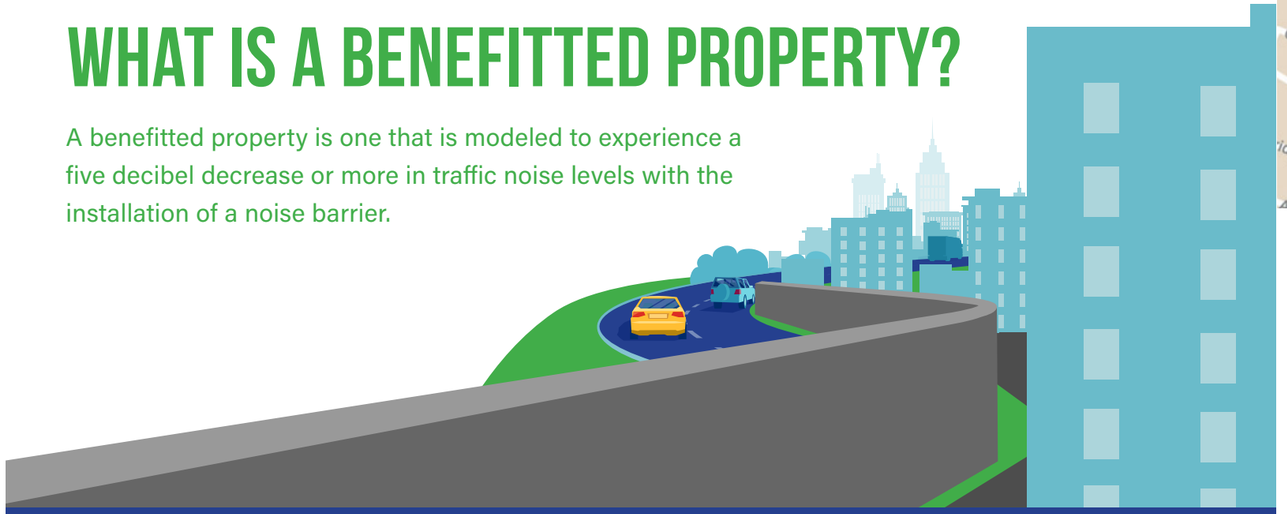
PROJECT INFORMATION

PTC is the lead agency on the PA Turnpike/I-95 Interchange Project. The project, once completed, will fully connect the PA Turnpike (I-276) and I-95/I-295 in Bristol Township, Bucks County. The main work items for Section D30 are:

- Widening the Turnpike between Bensalem Blvd and the I-95 flyover connection.
- Constructing four noise barriers at the following locations (if benefited properties vote Yes):
  1. Westbound Turnpike near Neshaminy Creek and Bensalem Blvd (NSA 17).
  2. Eastbound Turnpike near Neshaminy Creek and Bensalem Blvd (NSA 18).
  3. Eastbound Turnpike near future authorized vehicle access road and New Falls Road (NSA 18).
  4. Eastbound Turnpike near future ramp to I-95 southbound (NSA 7).

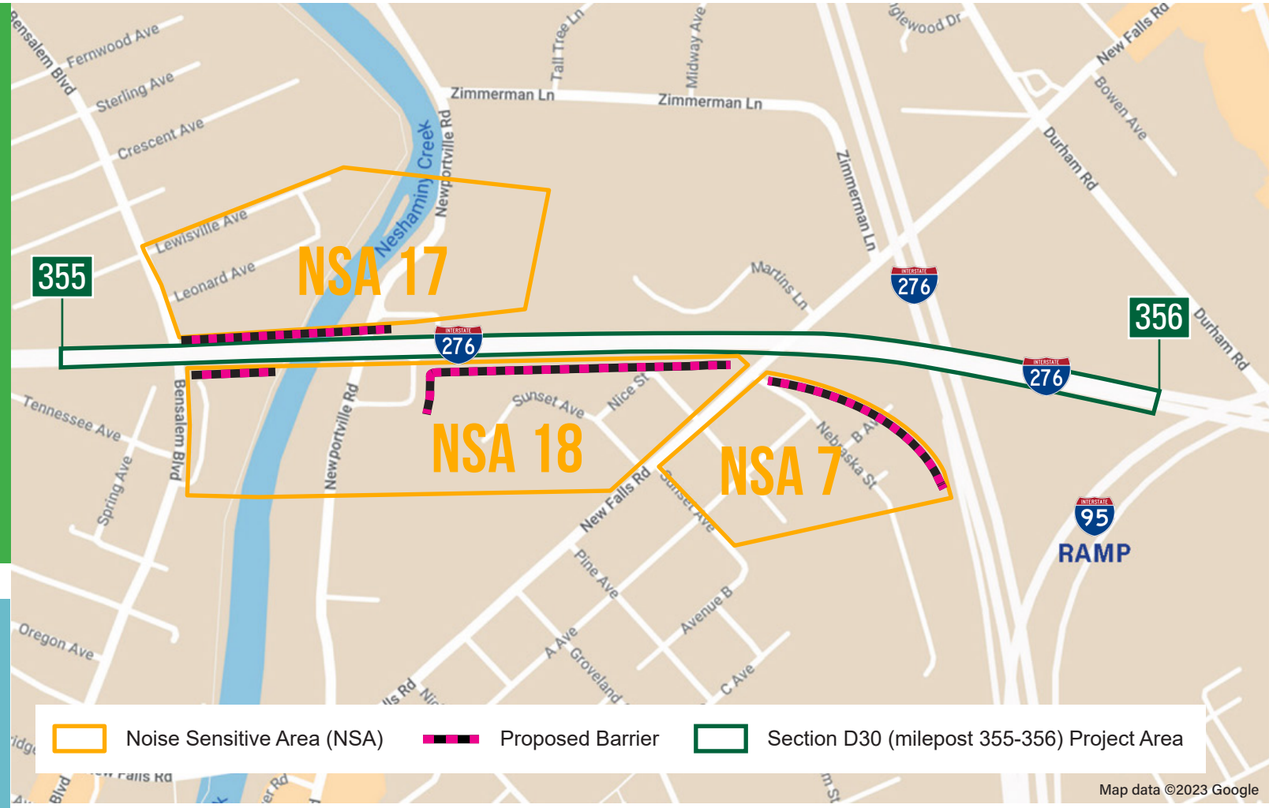
WHAT IS A BENEFITTED PROPERTY?

A benefitted property is one that is modeled to experience a five decibel decrease or more in traffic noise levels with the installation of a noise barrier.



WHEN WILL THE NOISE BARRIERS BE BUILT?

Construction for the project is anticipated to begin in 2023 and to take approximately three years to complete. Residents should be aware that the noise barriers are being proposed to mitigate noise from traffic after construction is completed, not during the construction itself.



This map shows the Noise Sensitive Areas and the location of the proposed noise barriers.

YOUR VOTE COUNTS

Potential noise barrier design is happening now. Public preferences are considered during this process. PTC is reaching out to you via this newsletter and virtual meeting to obtain your opinion and your vote. A barrier will be constructed only if the majority of affected residents vote to have one. This is a final decision; if the community votes not to have a barrier, it cannot return at a later time to request a noise barrier.

We are also interested in what you think the barrier should look like from the neighborhood. If the community wants a noise barrier, your vote on the appearance will be tallied. PTC will select the appearance on the highway side of the noise barrier. See the other side of this newsletter on how to vote.

The results will be available after all votes are received and counted. We will send you a letter informing you of the results.

For more information on the highway noise process, you may want to visit PennDOT's website at www.penndot.gov and then search for Publication 24, "Project Level Highway Traffic Noise Handbook."

PA TURNPIKE/I-95 INTERCHANGE PROJECT SECTION D30

NOISE BARRIER BALLOT

FEBRUARY 28, 2023

NAME

ADDRESS

EMAIL ADDRESS

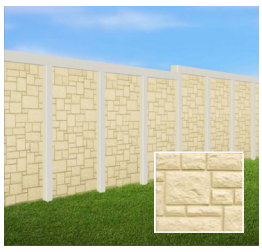
This ballot will be used to get feedback from the property owners and occupants of the properties within Noise Sensitive Areas 7, 17, and 18. You will be voting on whether a barrier should be built and how it looks to the community. The noise barrier will extend from 9 feet to 20 feet above ground surface. The images below illustrate the barrier's proposed appearance in the project area.

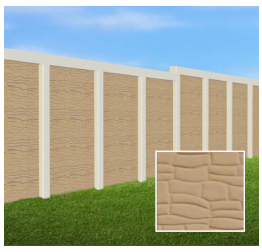
QUESTION #1: Do you own this property? **YES NO** (circle one) X _____
Please sign here to affirm that you are the owner of this property.

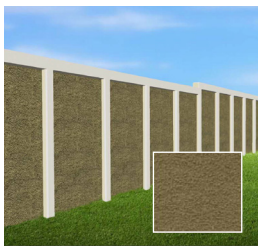
QUESTION #2: Do you rent this property? **YES NO** (circle one) X _____
Please sign here to affirm that you Rent this property.

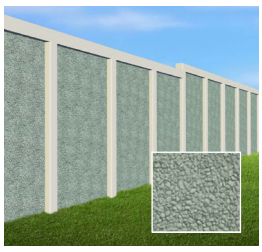
QUESTION #3: Do you want a noise barrier? **YES NO** (circle one)

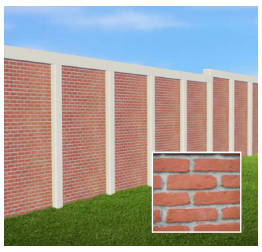
QUESTION #4: If you want a noise barrier, please circle the design you like best of those shown below (circle one). Aside from Antique Brick, the other designs are available in all four colors in Question #5 below.


Random Ashlar Stone


Dry Stacked Stone


Double Rake Stucco


Exposed Aggregate


Antique Brick
only available in color shown above

QUESTION #5: What color do you prefer?


☐ Tan


☐ Gray

☐ Beige


☐ Brown

PLEASE RETURN THIS BALLOT BY MARCH 31, 2023.

You may return this ballot via mail to:

PA Turnpike/I-95 Interchange Project Office
5 Neshaminy Interplex
Hilton Drive, Suite 205
Trevose, PA 19053

Thank you for your participation. If you have any questions, please contact **Mark F. Raup, PE via email at mraup@paturnpike.com or Patrick Kelly, PE (patrick.kelly@jacobs.com) of the Project's Design Management Team (215-355-3577).**

Please let us know if you have any additional comments, questions, or concerns about the project and/or noise abatement for the PA Turnpike/I-95 Interchange Project Section D30 in the space below. Feel free to attach additional sheets as needed.

PA TURNPIKE/I-95 INTERCHANGE PROJECT SECTION D30

NOISE BARRIER COMMUNITY OUTREACH

PROJECT INFORMATION/FREQUENTLY ASKED QUESTIONS

FEBRUARY 28, 2023

Section I-95-D30 Project Description

The Section I-95-D30 project includes the reconstruction and widening of the Pennsylvania Turnpike Commission's (PTC) Turnpike mainline (I-276) from west of the Bensalem Boulevard overpass to the I-95 flyover connection. Within this approximate 1.5-mile section, the Turnpike mainline (I-276) will be widened to 6 lanes with up to a 26-foot wide median. Tie-ins for future interchange ramps will be included in the contract as follows: Ramp A (I-276 EB to I-95 SB), Ramp C (I-295 WB to I-276 WB), and Ramp F (I-95 NB to I-276 WB). The structure work under this contract includes the reconstruction of one (1) bridge (Turnpike eastbound and westbound mainline over the Neshaminy Creek and Newportville Road), as well as the construction of four (4) noise walls. Additionally, gated emergency and authorized vehicle access ramps from Newportville Road to the Turnpike in both directions will be constructed as well as stormwater management facilities.

Impacted/Benefitted Property Owners and Renters

Impacted properties are those predicted to be impacted by traffic noise during the project's design year (2050), as identified in the Noise Impact Analysis completed in 2022. Owners and renters of the properties benefitted by proposed noise barriers have been sent this information, including an invitation to a virtual Noise Barrier Community Meeting, via FedEx.

Voting Groups (if necessary)

Property owners/renters are grouped together into voting groups based on continuity of noise barriers and sight line of barriers. Property owners/renters will vote individually on whether or not they want a noise barrier constructed. Property owners/renters who abut (meaning property lines touch) the noise barrier will receive the highest consideration of their color and texture choices.

Vote Tabulation

50% or greater of votes tallied of property owners/renters within a voting group must be in favor of construction in order for the noise barrier to be built. Property owners/renters will be asked to vote on color and texture. Specifically, they will be asked to indicate their first choice for both texture and color. Again, the majority of the votes within a voting group will determine the color and texture.

Reporting the Results

The results will be provided to you via mail and posted to the Project Website. Scan the QR code for more information on the Section I-95-D30 project.

FREQUENTLY ASKED QUESTIONS

Who is invited to the Noise Barrier Community Meeting?

Property owners/renters invited to the virtual Noise Barrier Community Meeting are those predicted to be benefitted by the proposed noise barriers during the project's design year (2050), as identified in the Noise Impact Analysis completed in 2022 (for this section).

How tall will the noise barriers be?

The Noise Impact Analysis indicates a range of 9 feet to 20 feet for noise barrier height. This height is optimized on a case-by-case basis to achieve maximum desired decibel reductions at the receptors (i.e., residential properties).

What will the noise barriers look like?

Images, which depict the choices for noise barrier aesthetics, are included in this mailing. Preferences of those property owners/renters who abut the noise barrier locations will receive the highest consideration. Barriers can have a different look on both sides and a consistent texture/finish will be installed on the highway side of the walls.

When will the noise barriers be built?

The Section I-95-D30 project will likely begin later in 2023. It will take about three years to complete. Noise barriers are built as soon as possible by the contractors, however, substantial work is sometimes needed before the barriers are able to be built. Residents should be aware that the noise barriers are being constructed to mitigate noise from traffic post construction, not during all phases of the construction itself.

Who can I contact if I have questions or concerns after the meeting?

PA Turnpike/I-95 Interchange Project Office
5 Neshaminy Interplex, Suite 205
Trevose, PA 19053
Patrick Kelly, PE, *Project Manager*
patrick.kelly@jacobs.com
(215) 355-3577 voice
www.paturnpikei95.com

No. of Mailings	NSA	Noise Report ID	Wall Y/N	Ashlar Stone	Dry Stacked Stone	Double Rake Stucco	Exposed Aggregate	Antique Brick	Tan	Gray	Beige	Brown
		R7.1										
1	7	R7.3										
2		*R7.4*	*Y*	*1*							*1*	
3		*R7.5*	*Y*			*1*						*1*
4		***R7.8***	***Y***	***1***							***1***	
5	18	R18.18										
6		*R18.19*	*Y*							*1*		
		R18.17										
7		*R18.30*	*Y*				*1*			*1*		
8		R18.29										
9		R18.28										
10		R18-27										
11		R18.4										
12		R18.35										
13		*R18.26*										
14		R18.36										
15		R18.25										
16		*18.2**	*Y*		*1*					*1*		
17		R18.5										
18		*R18.6*	*Y*		*1*							*1*
19		R18.7										
20		*R18.8*	*Y*	*1*					*1*			
21		*R18.11 and R18.3B*	*N*									
22		*R18.13 and R18.3A*	*Y*		*1*					*1*		
23		*R18.15*	*Y*		*1*					*1*		
SUM				**3**	**4**	**1**	**1**	**0**	**1**	**5**	**2**	**2**
1	17	*R17.4*	*N*									
2		*R17.5*	*Y*		*1*							*1*
3		*R17.6*	*Y*		*1*						*1*	
4		R17.7										
5		*R17.8*	*Y*			*1*						*1*
6		*R17.9*	*Y*				*1*			*1*		
7		*R17.10*	*Y*			*1*						*1*
8		R17.14										
9		R17.15										
10		*R17.17*	*Y*				*1*			*1*		
11		*R17.19*	*Y*				*1*			*1*		
SUM				**0**	**2**	**2**	**3**	**0**	**0**	**3**	**1**	**3**

Appendix D

List of Preparers

- Ahmed El-Aassar, PhD, P.E., Group Lead
- Adam Alexander, ENV SP, Senior Noise Analyst
- Sondra Peterson, Noise Analyst
- Kevin Brown, Noise Analyst