PRELIMINARY TECHNICAL NOISE REPORT

EISENHOWER DRIVE EXTENSION PROJECT
PRELIMINARY ENGINEERING
ADAMS COUNTY & YORK COUNTY
PENNSYLVANIA

E001087 PART 12
MPMS NO. 58137

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MAY 2019
REVISED SEPTEMBER 2019

SqCivil Project No. 38027-12

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

The Eisenhower Drive Extension Project is intended to provide transportation improvements aimed at addressing the traffic congestion and safety concerns within the study area. The project involves investigating project alternatives including improvements to the local existing roadway network as well as the potential to extend Eisenhower Drive through Conewago Township from where it currently ends at High Street to Hanover Road (SR 0116) west of McSherrystown. The project considers traffic congestion and traffic safety, regional and local travel patterns, community connectivity, and avoidance and minimization of impacts.

The project is located in Conewago Township and McSherrystown Borough, Adams County and Hanover Borough, York County, Pennsylvania. An On-Alignment Transportation Systems Management Alternative (TSM Alternative) is being considered as an alternative to extending Eisenhower Drive. The design team is considering new off-alignment alternatives, partial new alignment alternatives, and other options to improve the existing roadway network.

A detailed noise analysis was chosen for the Off-Alignment Build Alternative (Alternative 5C) because noise impacts were anticipated along this new section of roadway. Model validation and noise monitoring were conducted for Alternative 5C, and results are included in this preliminary technical noise report.

A noise screening analysis was chosen for the On-Alignment TSM Alternative because noise abatement is clearly not feasible (i.e. Main Street scenario) along the SR 0116 / SR 0094 corridor. The results of the TSM Alternative Noise Screening Analysis are documented in **Appendix K** and concludes that noise mitigation is not feasible.

Noise monitoring along the Alternative 5C proposed alignment was performed in the Spring of 2019 in conformance with FHWA-PD-96-046, Measurement of Highway-Related Noise. Ambient readings were conducted using a Larson Davis 831 and a Larson Davis LXT Sound Meters. Each meter was calibrated at 114 dB(A) before tests were taken. Initial ambient monitoring consisted of short-term ambient readings taken at 29 sites. The duration of each short-term test was 20 minutes. Each site had simultaneous traffic counting and speed collection performed for model validation.

The ambient noise level modeling was performed using Traffic Noise Model (TNM) Version 2.5 in accordance with the United States Code of Federal Regulations (CFR), Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise and PennDOT Publication No. 24, Project Level Highway Traffic Noise Handbook.

2015 Existing Worst-Case and 2042 Build Conditions were modeled and documented as part of this report. Mitigation options were studied for feasibility and reasonableness in the Noise Study Areas

(NSAs) that warrant abatement consideration in accordance with FHWA and PennDOT Noise Abatement Criteria (NAC).

Seven areas were identified where mitigation is warranted under the 2042 Build Condition and noise barrier designs were investigated for feasibility and reasonableness. For preliminary analysis purposes noise barriers were considered to be the only feasible form of noise mitigation, but earth noise berms will be considered where feasible during the Final Design noise study. The seven areas are:

- NSA 3 – Houses & businesses in northwest quadrant of SR 0116 & Sunday Dr Intersection
- NSA 5 – Barley Circle neighborhood
- NSA 8 – Conewago Drive neighborhood
- NSA 9 – Sherry Village neighborhood
- NSA 10 – Houses bounded by Church St, Oxford Ave, and Alternative 5C Eisenhower Dr
- NSA 11 – Houses & businesses bounded by Oxford Ave, High St, & Alternative 5C Eisenhower Dr
- NSA 12 – UTZ Soccer Fields

Preliminary noise barrier alignments were set based on the best available existing and proposed topography and impacted property locations at the time of analysis to provide the most cost-effective layout. When optimizing the height of the noise barriers, PennDOT noise barrier abatement design goals were used as well as consideration of feasibility and reasonableness criteria. Each of the barriers were analyzed at various constant heights, then were optimized to determine the most cost-effective barrier while meeting the noise barrier abatement goals. A summary of the noise study findings is provided in **Table ES.1**. The results show that four noise barriers are potentially warranted, feasible, and reasonable using PennDOT criteria.

This report outlines the preliminary results of the detailed noise monitoring and analysis performed as part of the environmental documentation phase of the project. It provides recommendations on the extent of noise abatement required to meet both FHWA and PennDOT noise guidelines and the procedures to be taken to meet these requirements.

If Alternative 5C is selected as the preferred Build condition, additional refined noise modeling will be conducted and desires of the benefited communities with reasonable noise barrier will be collected during the final design phase of the project along with an analysis of undeveloped lands.

Any newly proposed noise sensitive areas (i.e., residence, hotel, school, church, hospital, library, etc.) along the corridor will be incorporated into future noise analysis if an outdoor use exists and the design is considered “permitted.” Additional testing and/or modeling may be needed. If necessary, proposed development plans will be acquired from the municipality and incorporated into future noise analysis if a building permit has been issued before the “date of public knowledge.”

TABLE ES.1 Alternative 5C Preliminary Sound Barrier Analysis Summary

Noise Study Area (NSA)	Optimized Barrier Location	Number of Impacted[1] Receptor Units	Impacted[1] Units w/ 5 dB(A)+ IL[2] Benefit	Non-Impacted[1] Units w/ 5 dB(A)+ IL[2] Benefit	Total Number of Benefited Receptor Units	Optimized Barrier Length (FT)	Height above Ground fromTNM (FT)	Square Footage of Optimized Barrier (SF)	Square Footage per Benefited Receptor (SF) (Max = 2,000)	Feasible? Resonable? (YES / NO)
NSA 3	Houses & businesses in northwest quadrant of SR 0116 & Sunday Dr Intersection	12	11	2	13	2,073	11'-15' (Ave. 12.51')	25,926	1,994	YES / YES
NSA 5	Barley Circle Neighborhood	4	4	2	6	1,038	8'-13' (Ave. 12.41')	12,875	2,146	YES / NO[3]
NSA 8	Conewago Drive Neighborhood	33	33	15	48	2,223	20'-28' (Ave. 26.55')	59,027	1,230	YES / YES
NSA 9	Sherry Village Neighborhood	46	36	0	36	1,902	16'-20' (Ave. 19.41')	36,927	1,026	YES / YES
NSA 10	Houses bounded by Church Street, Oxford Avenue, and extended Eisenhower Drive	3	0	0	0	388	28'	10,853	N/A	NO / NO
NSA 11	Houses/businesses bounded by Oxford Avenue, High Street, and extended Eisenhower Drive	2	0	1	1	751	16'-20' (Ave. 17.37')	13,045	13,045	NO / NO
NSA 12	UTZ Soccer Fields	10	0	0	0	1,515	28'	42,414	N/A	NO / NO

Notes:

1. Impacted receptors are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following PennDOT criteria:
   Predicted Highway Traffic Noise levels equal or exceed Noise Abatement Criteria or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
2. IL: Insertion Loss.
3. The NSA 5 Barrier has the potential to meet the MaxSF/BR Resonableness Criteria using refined noise modeling techniquea and barrier analysis during final design.

2.0 INTRODUCTION

2.1 Background and Project Location

Project Overview

The Eisenhower Drive Extension Project is located in York and Adams Counties. Eisenhower Drive, SR 0094 (Carlisle Street), and SR 0116 (Hanover Road, Main Street, 3rd Street) are main traffic corridors which provide an east/west connection through McSherrystown and Hanover Boroughs, and Conewago and Penn Townships. These roadways are heavily congested, do not move traffic as efficiently as needed, and experience higher-than-average crash frequency when compared to similar roadways within the Commonwealth.

This project involves extending Eisenhower Drive through Conewago Township, from where it currently ends at High Street to Hanover Road (SR 0116) west of McSherrystown. The design team is considering new off-alignment alternatives, partial new alignment alternatives, and other options to improve the existing roadway network.

A detailed noise analysis was chosen for the Off-Alignment Build Alternative (Alternative 5C) because noise impacts were anticipated along this new section of roadway. Model validation and noise monitoring were conducted for Alternative 5C and results are included in this preliminary technical noise report.

A screening analysis was chosen for the Transportation Systems Management (TSM) Alternative because abatement is clearly not feasible (i.e. Main Street Scenario) along the SR 0116 / SR 0094 corridor. Model validation and noise monitoring are not required for a screening analysis and, therefore, are not included in the TSM Alternative Screening Report located in **Appendix K**.

History

In 1997, the Hanover Area Transportation Planning Study was presented to PennDOT. This study included several key projects, including a proposal to extend Eisenhower Drive which could help address the growing transportation needs in the area.

Between 2005 and 2007, PennDOT initiated the Eisenhower Drive Extension Project. Initial project efforts included evaluating environmental constraints, existing traffic patterns, and coordination with municipal staff/leaders. The project was put on hold due to funding constraints.

In 2011, Adams County issued the Eisenhower Parkway Study, which was a local planning effort to identify potential new alignments for Eisenhower Drive.

PennDOT re-initiated the project in November 2014 and is moving ahead with the required environmental studies and preliminary design efforts.

Roadway Conditions

Eisenhower Drive and SR 0116 travel corridors are the main traffic corridors through McSherrystown and Conewago Township, Adams County, and serve as a primary east-west link between Penn Township / Hanover Borough and destinations west of McSherrystown.

SR 0116 and SR 0094 in McSherrystown and Hanover are congested to the point that they are unable to efficiently move traffic, especially during morning and evening rush hours. In fact, conditions are bad enough that they are labeled “unacceptable” in traffic analyses; characteristics include roads in constant traffic jam, incidents causing significant delays, and unpredictable travel time. Conditions are particularly poor in McSherrystown. As of 2017, SR 0116 carries 16,100 vehicles per day through the Borough of McSherrystown. The existing two-lane roadway is already near capacity, and traffic volume is expected to grow to 19,200 vehicles per day by 2042. If no improvements are made to the transportation network by then, it will take more than 5 minutes just to turn onto or cross over SR 0116 from one of the side streets in McSherrystown.

The crash rates for most roadways in the study area, and particularly along SR 0116 and SR 0094, are higher than the statewide average rates for similar roadway types. Accidents include rear-end and angled crashes, crashes involving pedestrians, and several crashes resulting in fatalities. Emergency vehicles have a hard time responding to incidents due to the lack of space for cars to move out of the way and disabled vehicles along SR 0116 and SR 0094 have very few places to move out of the travel lanes due to narrow shoulders, no median, or unrestricted on-street parking.

Community Amenities

Several public and parochial schools are located within the study area. There are no hospitals, but there is one elderly care facility located in the west end of McSherrystown. High-density residential neighborhoods are primarily located in the southern portion of the study area. Additional residential neighborhoods occur within the northern portion of the project area adjacent to agricultural lands. The Central Pennsylvania Transportation Authority (rabbittransit) features three main fixed bus routes that serve the Hanover area and run within or adjacent to the project area. There are no established bike routes located within or immediately adjacent to the project area; however, sidewalks are available for pedestrians within McSherrystown and Hanover Boroughs.

The purpose of this Preliminary Technical Noise Report is to assess and document potential noise impacts associated with the Alternative 5C study area and to determine if mitigation is warranted, feasible, and reasonable by analyzing the selected roadway alignments for Existing Worst-Case Conditions and Future 2042 Design Year Build Conditions.

An initial site visit was made in December 2018 to establish Noise Study Areas (NSAs), determine Traffic Monitoring Session (TMS) areas, and to determine locations for noise monitoring, traffic counts, and speed checks.

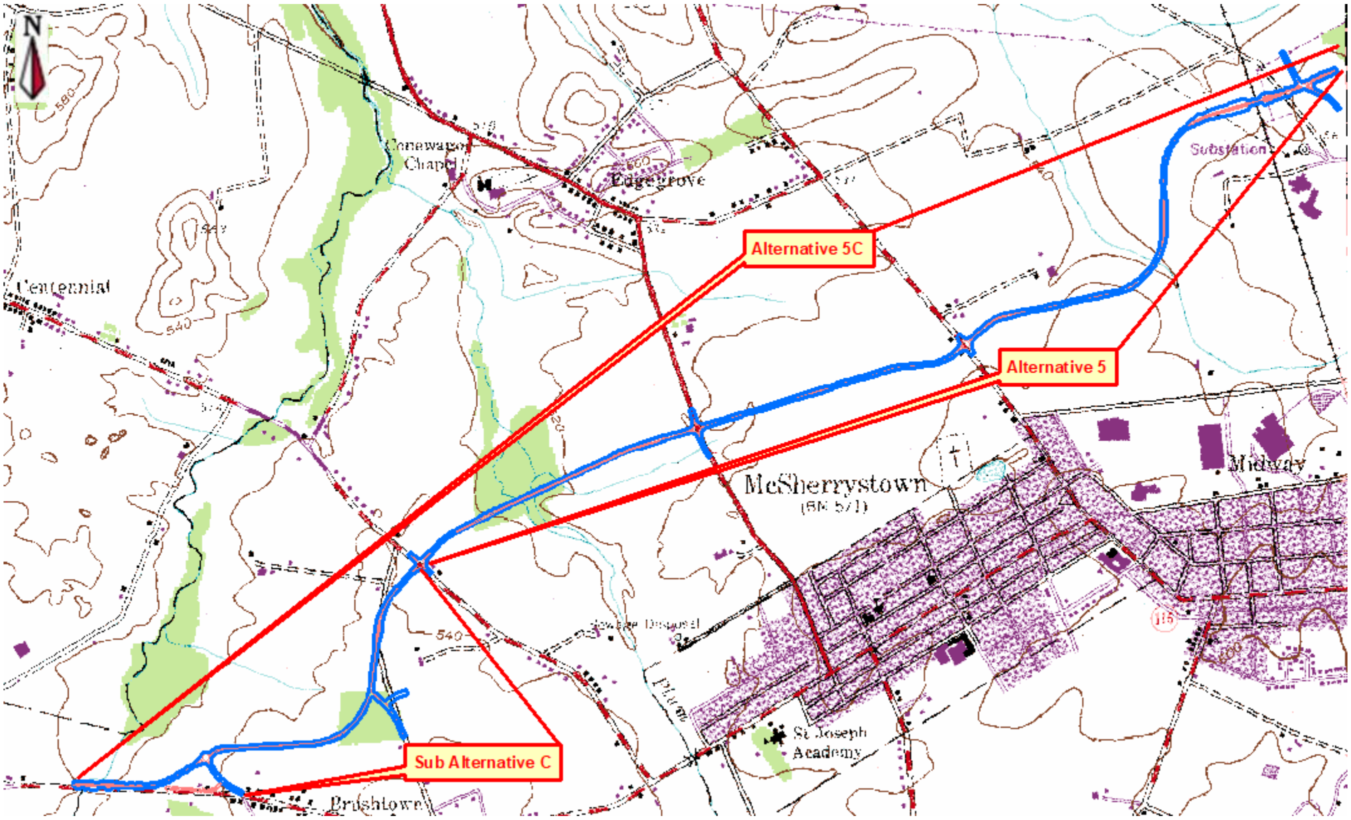


FIGURE 1 – PROJECT LOCATION MAP
Eisenhower Drive Extension Project – Alternative 5C
Hanover Borough and Conewago Township
Adams and York Counties, Pennsylvania

2.2 Project Purpose and Description

Project Purpose

The primary purpose of the project is to facilitate safe and efficient multi-modal travel within the project study area to meet both current and future transportation needs of the area. Anticipated transportation improvements will reduce congestion and accommodate for planned growth throughout this portion of the region, including a reduction in impacts of truck and commuter traffic within the study area.

The secondary purpose of this project is to provide a functional and modern roadway that maximizes current design criteria and promotes and enhances multi-modal connections and transportation alternatives within and surrounding the study area.

Off-Alignment Build Alternative 5 travels west from the existing end of Eisenhower Drive over the CSX rail line and turns southbound to run along the eastern edge of the Sheaffer property. It then turns westbound and extends along the property line between the Sheaffer property and the Clark America (Clarks Shoe) property. Alternative 5 continues westbound, crossing Oxford Avenue, Church Street, and Plum Creek along the southern edge of the Smith farm, adjacent to residential neighborhoods to the south. After crossing Plum Creek, Alternative 5 continues westbound and intersects with Centennial Road near the existing Centennial Road and Sunday Drive intersection.

Sub-alternative C utilizes a short stretch of the existing Sunday Drive before continuing westbound on a new alignment. Sub-alternative C ultimately ties into SR 0116 to the east of the existing structure crossing South Branch of Conewago Creek and requires either a new traffic signal or roundabout improvements at the intersection with existing SR 0116. Alternative 5C alignment can be seen on **Maps 11-15.**

The majority of Alternative 5C has a proposed rural typical section roadway that consists of two 12-foot lanes with 8-foot shoulders. The eastern most section of Alternative 5C at High Street has a proposed suburban center typical section that consists of two 12-foot lanes with 4-foot shoulders, 5-foot buffers and 5-foot sidewalks.

3.0 METHODOLOGY

This noise study has been completed using the methodology described in Pennsylvania Department of Transportation (PennDOT) Publication No. 24, Project Level Highway Traffic Noise Handbook, November 2015 and Federal Highway Administration (FHWA) criteria as described in 23 CFR Part 772 for the Design Year of 2042.

3.1 Highway Noise Fundamentals

A discussion on Highway Noise Fundamentals is included, because it helps define many of the terms and criteria utilized in this report.

The extent to which individuals are affected by noise sources is controlled by several factors, including:

- The duration and frequency of sound
- The distance between the sound source and the receiver
- The intervening natural or man-made barriers or structures
- The ambient environment

The level of highway traffic noise depends primarily upon the following:

- The volume of traffic
- The speed of traffic
- The number of trucks in the flow of traffic

Generally, traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. Consequently, the FHWA has established the following vehicle categories to use in traffic noise analysis:

- Heavy duty trucks, defined as vehicles having three or more axles
- Medium duty trucks, defined as vehicles with two axles and six wheels
- Automobiles, defined as vehicles with two axles and four wheels
- Buses
- Motorcycles

Heavy duty trucks typically produce more noise than medium duty trucks traveling at the same speed. Medium duty trucks, in turn, typically generate more noise than automobiles.

Traffic noise is measured and described according to FHWA guidelines, which allows the use of the hourly equivalent sound level [Leq (h)] as the primary descriptor for noise analysis. Leq (h) is defined as the equivalent steady state sound level, which in one hour contains the same acoustic energy as the time-varying sound level during the same one-hour period.

The unit of measure for the Leq is the "A-weighted" decibel [dB(A)]. The dB(A) scale de-emphasizes the very low and very high frequencies and emphasizes the middle frequencies, thereby closely approximating the frequency response of the human ear. **Table 1** provides examples of common outdoor noise levels and their respective noise level decibels. To place the noise levels into a context that some people can more easily relate to, **Table 1** also provides the equivalent common indoor noise levels.

Typically, noise level changes between 2 and 3 dB(A) are barely perceptible, while a change of 5 dB(A) is readily noticeable by most people. A 10 dB(A) increase is usually perceived as a doubling of loudness, and conversely, noise is perceived to be reduced by one-half when a sound level is reduced by 10 dB(A).

Table 1 Common Outdoor and Indoor Noise Levels[1]

Common Outdoor Noise Levels	Noise Level Decibels [dB(A)]	Common Indoor Noise Levels
	110	Rock Band
Jet Fly Over at 1,000 feet	100	Inside Subway Train (NY)
Gas Lawn Mower at 3 feet		
Diesel Truck at 50 feet	90	Food Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet or Shouting at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area	60	Normal Speech at 3 feet
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
		Broadcast & Recording Studio
	10	Threshold of Hearing
	0	

1. Adapted from Guide on Evaluation and Attenuation of Traffic Noise, AASHTO-1974.

3.2 Noise Abatement Criteria

The determination of traffic noise impacts is based on the relationship between the 2015 Existing Worst-Case noise levels, 2042 Design Year predicted noise levels, and the established noise abatement criteria for the study area. The effects of noise are determined in accordance with the FHWA guidelines as established by 23 CFR Part 772 and PennDOT Policies. The Federal Noise Abatement

Criteria (NAC) provided in **Table 2** are based on specific land uses and are used in determining areas that warrant noise abatement consideration.

Table 2 Hourly Weighted Sound Levels dB(A) For Various Land Use Categories

Land Use Activity Category	Exterior Leq(h)[1]	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[2]	67 (Exterior)	Residential
C[2]	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[2]	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A, B or C.
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.

Source: PennDOT Publication No. 24 dated November 2015
1. Impact thresholds should not be used as design standards for noise abatement purposes.
2. Includes undeveloped lands permitted for this activity category
PennDOT has chosen to use Leq(h) [not L10(h)] on all of its transportation improvement projects.

Based on field reconnaissance, desktop mapping, and deed research the identified active land uses along the corridor are single and multi-family residences, sports areas, cemeteries, medical facilities, a radio studio, schools, and a motel which are considered Land Use Category B, C, and E as per 23 CFR Part 772. The undeveloped fields within the project limits are considered Land Use Category G and will be analyzed in the final noise report to provide 66 dB(A) and 71 dB(A) noise contours to aid municipalities in future planning.

Per FHWA, a receiver in Category B and C is considered to be “impacted” when traffic noise levels approach or exceed 67 dB(A), or when the predicted noise levels are substantially higher than the existing ambient noise levels. A receiver in Category E is considered to be “impacted” when traffic noise levels approach or exceed 72 dB(A), or when the predicted noise levels are substantially higher than the existing ambient noise levels. In defining the term “approaches,” PennDOT has adopted 66 dB(A) as the impact threshold for Category B and C, and 71 dB(A) for Category E, and uses a 10dB(A) increase over existing noise levels to define a substantial increase.

This noise study involves proposed roadway improvements including a new roadway alignment, Alternative 5C, as outlined in Section 2.2, making this a Type I noise analysis. A Type I study is performed when new highways are constructed, existing highways are expanded, or there is a significant change in the horizontal or vertical alignment of the highway.

4.0 EXISTING HIGHWAY NOISE ENVIRONMENT

4.1 Noise Study Area Descriptions

Noise Study Areas (NSAs) can be residential as well as non-residential. Residential NSAs include single-family residences, multi-family residences, and motels/hotels. Non-residential NSAs include recreation areas, playgrounds, active sports areas, trails, parks, schools, churches, libraries, and hospitals located adjacent to the project corridor.

During Preliminary Analysis, 14 NSAs were defined through the proposed Eisenhower Extension corridor. **Figure 2** and **Maps 6 through 10** show the locations of the fourteen NSAs.

Noise analysis locations throughout the study area are referred to as "Receivers." In this preliminary study, receivers have been labeled according to the following convention: '**R**' receivers are mixed use receivers, **'M'** receivers are measured receivers, and **'T' and 'C'** receivers are trail and cemetery receivers placed in a grid format to correctly model usage. 'R', 'T', and 'C' receivers were not measured in the field for validation but are modeled in TNM Version 2.5 for the 2015 Existing Worst-Case and 2042 Build conditions.

NSA 1 - (Southwestern area represented by Receivers R-1-1 through R-1-8 and M-1-1) consists of undeveloped farm area, single-family homes, and baseball fields on the south side of SR 0116 bounded by the project limits and Race Horse Road. This is a Land Use Activity Category B, C, and G area as shown on **Map 6**.

NSA 2 - (Southwestern area represented by Receiver M-2-1) consists of a single-family home on the north side of SR 0116 bounded by the Alternative 5C roadway. This is a Land Use Activity Category B area as shown on **Map 6**.

NSA 3 - (Southwestern area represented by Receivers R-3-1 through R-3-8, T-3-1 through T-3-13, and M-3-1 through M-3-3) consists of single and multi- family homes, walking trail, and commercial property on the north side of SR 0116 bounded by the project limits and Sunday Drive. This is a Land Use Activity Category B and E area as shown on **Map 6**.

NSA 4 - (Southwestern area represented by Receiver M-4-1) consists of undeveloped farm area and single-family homes on the southwest side of Centennial Road bounded by Sunday Drive, the Alternative 5C roadway, SR 0116, and the project limits. This is a Land Use Activity Category B and G area as shown on **Maps 6 and 7**.

NSA 5- (Southwestern area represented by Receivers R-5-1 through R-5-13 and M-5-1 through M-5-3) consists of undeveloped farm area and single-family homes on the east side of Sunday Drive bounded by the project limits and Centennial Road. This is a Land Use Activity Category B and G area as shown on **Map 6 and Map 7**.

NSA 6 - (Southwestern area represented by Receiver M-6-1) consists of undeveloped farm area and a single-family home on the south side of the Alternative 5C roadway bounded by the project limits, Plum Creek, and Centennial Road. This is a Land Use Activity Category B and G area as shown on **Map 7**.

NSA 7 - (Southwestern area represented by Receivers R-7-1 through R-7-5, M-7-1, and M-7-2) consists of single-family homes on the north side of the Alternative 5C roadway bounded by the project limits and Centennial Road. This is a Land Use Activity Category B area as shown on **Map 7**.

NSA 8 - (Southern area represented by Receivers R-8-1 through R-8-10 and M-8-1 through M-8-3) consists of single and multi-family homes on the south side of the Alternative 5C roadway bounded by the project limits and Church Street. This is a Land Use Activity Category B area as shown on **Map 7 and Map 8**.

NSA 9 - (Southern area represented by Receivers R-9-1 through R-9-20, C-1 through C-20, and M-9-1 through M-9-5) consists of single and multi-family homes and a cemetery on the south side of the Alternative 5C roadway bounded by Church Street, the project limits, and Oxford Avenue. This is a Land Use Activity Category B and C area as shown on **Map 8**.

NSA 10 - (Northern area represented by Receivers R-10-1, M-10-1, and M-10-2) consists of the undeveloped farm area and single-family homes on the north side of the Alternative 5C roadway bounded by the project limits, Oxford Avenue, and Church Street. This is a Land Use Activity Category B and G area as shown on **Map 8**.

NSA 11 - (Northeastern area represented by Receivers M-11-1 through M-11-3 and C-11-1) consists of undeveloped farmland, single and multi-family homes, a historic cemetery, a dentist office, and commercial areas on the north side of the Alternative 5C roadway bounded by Oxford Avenue, the project limits, and High Street. This is a Land Use Activity Category B, C, E, and G area as shown on **Map 8, Map 9, and Map 10**.

NSA 12 - (Northeastern area represented by Receivers R-12-1 through R-12-3, M-12-1, and M-12-2) consists of farmland, a single-family home, a school, soccer fields, a radio station, and commercial areas on the south side of the Alternative 5C roadway bounded by Oxford Avenue, Kindig Lane, and High Street. This is a Land Use Activity Category B, C, E, and G area as shown on **Map 9 and Map 10**.

NSA 13 - (Northeastern area represented by Receivers R-13-1 and M-13-1) consists of single-family homes and commercial properties on the west side of SR 0094 bounded by Eisenhower Drive, High Street, and Radio Road. This is a Land Use Activity Category B and E area as shown on **Map 10**.

NSA 14 - (Northeastern area represented by Receiver M-14-1) consists of the Super 8 Motel and commercial buildings on the west side of SR 0094 bounded by the Wetzel Drive, High Street, and Eisenhower Drive. This is a Land Use Activity Category E area as shown on Map 10.

Note that newly proposed noise sensitive areas (i.e. residence, hotel, school, church, hospital, library, etc.) along the corridor will be incorporated into future noise analysis if an outdoor use exists and the design is considered "permitted." Additional testing and/or modeling may be needed. If necessary, proposed development plans will be acquired from the municipality and incorporated into future noise analysis if a building permit has been issued before the "date of public knowledge." The municipalities have been contacted to request information for any planned noise sensitive land uses.

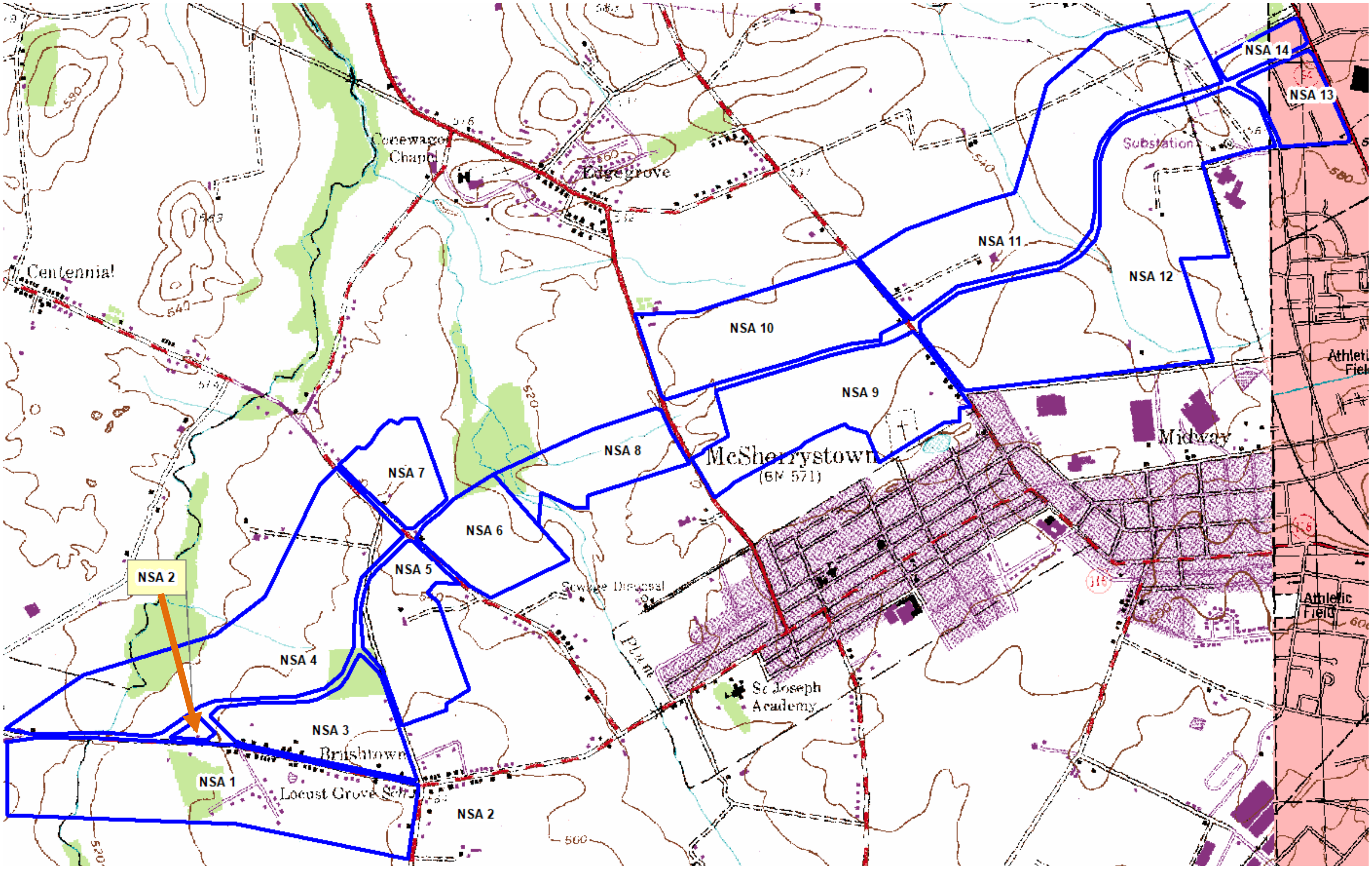


Figure 2: Noise Study Area (NSA) Locations
Eisenhower Drive Extension Project – Alternative 5C
Hanover Borough and Conewago Township
Adams and York Counties, Pennsylvania

4.2 Determining Existing Conditions

Short-term monitoring locations were selected along the Alternative 5C corridor with an attempt to represent the entire community as a whole. Monitored receivers were placed at the ends and in the middle of noise study areas as well as in the first row and second row of buildings, where applicable. The short-term monitoring sites (M-1-1 through M-14-1) are shown on **Map 1 through Map 5** and are described in **Table 3** below.

Table 3 Monitored Receiver Location Description

Receiver Number	Residence Address or Property Description	Land Use Type	Location
M-1-1	5585 Hanover Rd	B	Side Yard
M-2-1	5430 Hanover Rd	B	Side Yard
M-3-1	5530 Hanover Rd	B	Backyard
M-3-2	110 St Michaels Way	B	Backyard
M-3-3	161 St Michaels Way	B	Front Yard
M-4-1	310 Sunday Dr	B	Front Yard
M-5-1	318 Barley Circle	B	Backyard
M-5-2	58 Barley Circle	B	Backyard
M-5-3	89 Barley Circle	B	Front Yard
M-6-1	3426 Centennial Rd	B	Front Yard
M-7-1	3326 Centennial Rd	B	Front Yard
M-7-2	271 Friendly Drive	B	Backyard
M-8-1	5 Tiffany Ct	B	Backyard
M-8-2	7 Sease Dr	B	Backyard
M-8-3	69 Conewago Dr	B	Backyard
M-9-1	28 Franklin Ct	B	Backyard
M-9-2	246 Johnathon Dr	B	Front Yard
M-9-3	279 Johnathon Dr	B	Backyard
M-9-4	502 Providence Dr	B	Front Yard
M-9-5	182 Oxford Ave	B	Backyard
M-10-1	509 Church St	B	Front Yard
M-10-2	310 Oxford Ave	B	Backyard
M-11-1	303 Oxford Ave	B	Front Yard
M-11-2	305 Oxford Ave	B	Side Yard
M-11-3	Dentist	C	Backyard
M-12-1	Utz Soccer Fields	C	Soccer Field
M-12-2	Menonite School	C	Backyard
M-13-1	83 Radio Rd	B	Backyard
M-14-1	Super 8 Motel	E	Side Yard

4.3 Noise Measurement Data

Highway noise measurements were performed in conformance with the U.S. Department of Transportation FHWA's Measurement of Highway-Related Noise (FHWA-PD-96-046 May 1996). Short-term (20-minute) noise measurements at 29 sites were conducted for this study in Spring 2019.

Field data corresponding to this section of the report can be found in:

- **Appendix A** – Noise Measurement Data
- **Appendix B** – Traffic Count Data

These field measurements were used to determine the existing noise levels and to calibrate the FHWA Traffic Noise Model. The noise measurements were conducted using Larson Davis 831 and Larson Davis LXT Sound Meters. Each meter was calibrated at 114 dB(A) before tests were taken. Calibration certificates for each piece of equipment are included in **Appendix G**.

The persons conducting the Traffic Noise Analysis are qualified as per PennDOT Pub. No. 24 and copies of Certificates of Training can be found in **Appendix H**.

Twenty-nine (29) short-term noise measurements (20-minute duration) were conducted at each receiver within the 14 NSAs along the project corridor. The 20-minute tests were set up for 1-minute intervals to filter out any non-highway related noise (i.e. dog barking, horns, and airplanes) during the monitoring session. The 20-minute equivalent sound level, Leq (20-min), was calculated for each noise measurement. **Table 4** summarizes the measured noise hour level for each of the short-term noise measurements. The level is rounded to the nearest whole decibel in accordance with PennDOT guidelines. **Maps 1 through 5** show existing noise levels.

4.4 Existing Conditions Results

The noise monitoring results from **Table 4** shows that two of the 29 tested receivers have existing ambient noise levels that exceed the PennDOT NAC, as per **Table 2**, representing four (4) residences.

4.5 Monitoring Traffic Data

Short-term noise measurements were collected concurrently with classified traffic counts and speed tests for each noise measurement sessions in Spring 2019. The 20-minute Traffic Monitoring Session (TMS) counts were divided into five (5) vehicle classes: cars, large trucks, medium trucks, buses, and motorcycles. Speeds were determined using a radar gun and the collected speeds represent the average speed during each session. The traffic counts and speeds were then used in Traffic Noise Model (TNM) validation as outlined in **Section 4.6** of this report.

The traffic count data is presented in **Appendix B** along with average speed for each session.

Table 4 Short-Term Noise Measurement Summary

Receiver Number	Residence Address or Property Description	Land Use Type	Location	Date	Interval	Duration	Existing Noise Level Leq, dB(A)[1]
M-1-1	5585 Hanover Rd	B	Side Yard	3/27/2019	0900-0920	20-min	64
M-2-1	5430 Hanover Rd	B	Side Yard	3/27/2019	0900-0920	20-min	65
M-3-1	5530 Hanover Rd	B	Backyard	3/27/2019	0940-1000	20-min	45
M-3-2	110 St Michaels Way	B	Backyard	3/27/2019	0940-1000	20-min	42
M-3-3	161 St Michaels Way	B	Front Yard	3/27/2019	1020-1040	20-min	41
M-4-1	310 Sunday Dr	B	Front Yard	3/27/2019	1140-1200	20-min	50
M-5-1	318 Barley Circle	B	Backyard	3/27/2019	1020-1040	20-min	48
M-5-2	58 Barley Circle	B	Backyard	3/27/2019	1100-1120	20-min	49
M-5-3	89 Barley Circle	B	Front Yard	3/27/2019	1100-1120	20-min	38
M-6-1	3426 Centennial Rd	B	Front Yard	3/27/2019	1140-1200	20-min	**66**
M-7-1	3326 Centennial Rd	B	Front Yard	3/27/2019	0100-0120	20-min	**66**
M-7-2	271 Friendly Drive	B	Backyard	3/27/2019	0100-0120	20-min	35
M-8-1	5 Tiffany Ct	B	Backyard	3/27/2019	0150-0210	20-min	39
M-8-2	7 Sease Dr	B	Backyard	3/27/2019	0150-0210	20-min	45
M-8-3	69 Conewago Dr	B	Backyard	3/28/2019	0900-0920	20-min	46
M-9-1	28 Franklin Ct	B	Backyard	3/28/2019	0940-1000	20-min	41
M-9-2	246 Johnathon Dr	B	Front Yard	3/28/2019	0940-1000	20-min	39
M-9-3	279 Johnathon Dr	B	Backyard	3/28/2019	0120-0140	20-min	39
M-9-4	502 Providence Dr	B	Front Yard	3/28/2019	0120-0140	20-min	43
M-9-5	182 Oxford Ave	B	Backyard	3/28/2019	1140-1200	20-min	51
M-10-1	509 Church St	B	Front Yard	3/28/2019	0900-0920	20-min	61
M-10-2	310 Oxford Ave	B	Backyard	3/28/2019	1100-1120	20-min	54
M-11-1	303 Oxford Ave	B	Front Yard	3/28/2019	1100-1120	20-min	65
M-11-2	305 Oxford Ave	B	Side Yard	3/28/2019	1140-1200	20-min	48
M-11-3	Dentist	C	Backyard	3/28/2019	0140-0200	20-min	54
M-12-1	Utz Soccer Fields	C	Soccer Field	3/28/2019	0100-0120	20-min	47
M-12-2	Menonite School	C	Backyard	3/28/2019	0100-0120	20-min	58

Table 4 Short-Term Noise Measurement Summary

Receiver Number	Residence Address or Property Description	Land Use Type	Location	Date	Interval	Duration	Existing Noise Level Leq, dB(A)[1]
M-13-1	83 Radio Rd	B	Backyard	3/28/2019	0220-0240	20-min	60
M-14-1	Super 8 Motel	E	Side Yard	3/28/2019	0220-0240	20-min	54

LEGEND

☐ **Exceeds PennDOT NAC[2]**

1. *All Noise Levels are shown as hourly equivalent sound levels (Leq[h]) with units in A-weighted decibels (dB[A]. Noise values are calculated to the tenth of a dB(A) and then rounded to the nearest whole decibel for presentation purposes in accordance with PennDOT guidelines.*
2. *Receivers where the existing (measured) noise levels equal or exceed Noise Abatement Criteria (NAC) corresponding to Land Use Type as shown in Table 1.*

4.6 TNM Model Validation

The TNM model validation verifies the validity of the TNM model by evaluating the model's ability to reproduce the measured noise levels under specific measured traffic conditions. After the Noise Measurements and Traffic Counts were obtained, a TNM Model was developed for the study area. This model includes all pertinent roadways, terrain, and structural elements thought to be needed for adequately characterizing the study area's noise environment. Each Noise Measurement Receiver was accurately represented in the model by a TNM Receiver. The model was then validated by testing it under the appropriate traffic conditions encountered during the corresponding traffic monitoring session. PennDOT considers a TNM Model to be properly validated when the Modeled Noise Levels are within ±3 dB(A) of the Measured Noise Levels for the receivers.

Table 5 compares the Measured Noise Levels to the Modeled Noise Levels from the TNM Runs.

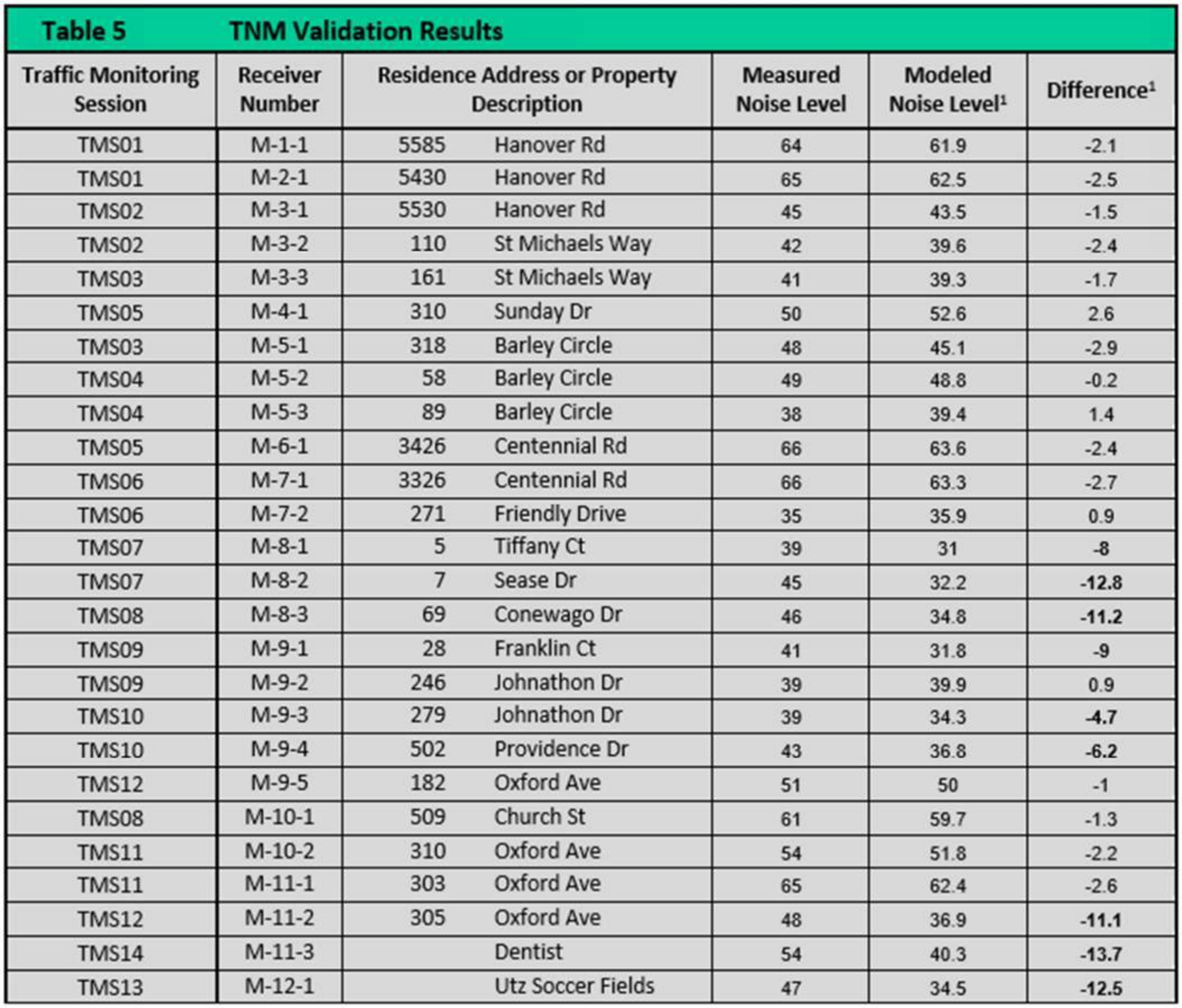


Table 5 TNM Validation Results

Traffic Monitoring Session	Receiver Number	Residence Address or Property Description	Measured Noise Level	Modeled Noise Level[1]	Difference[1]
TMS01	M-1-1	5585 Hanover Rd	64	61.9	-2.1
TMS01	M-2-1	5430 Hanover Rd	65	62.5	-2.5
TMS02	M-3-1	5530 Hanover Rd	45	43.5	-1.5
TMS02	M-3-2	110 St Michaels Way	42	39.6	-2.4
TMS03	M-3-3	161 St Michaels Way	41	39.3	-1.7
TMS05	M-4-1	310 Sunday Dr	50	52.6	2.6
TMS03	M-5-1	318 Barley Circle	48	45.1	-2.9
TMS04	M-5-2	58 Barley Circle	49	48.8	-0.2
TMS04	M-5-3	89 Barley Circle	38	39.4	1.4
TMS05	M-6-1	3426 Centennial Rd	66	63.6	-2.4
TMS06	M-7-1	3326 Centennial Rd	66	63.3	-2.7
TMS06	M-7-2	271 Friendly Drive	35	35.9	0.9
TMS07	M-8-1	5 Tiffany Ct	39	31	**-8**
TMS07	M-8-2	7 Sease Dr	45	32.2	**-12.8**
TMS08	M-8-3	69 Conewago Dr	46	34.8	**-11.2**
TMS09	M-9-1	28 Franklin Ct	41	31.8	**-9**
TMS09	M-9-2	246 Johnathon Dr	39	39.9	0.9
TMS10	M-9-3	279 Johnathon Dr	39	34.3	**-4.7**
TMS10	M-9-4	502 Providence Dr	43	36.8	**-6.2**
TMS12	M-9-5	182 Oxford Ave	51	50	-1
TMS08	M-10-1	509 Church St	61	59.7	-1.3
TMS11	M-10-2	310 Oxford Ave	54	51.8	-2.2
TMS11	M-11-1	303 Oxford Ave	65	62.4	-2.6
TMS12	M-11-2	305 Oxford Ave	48	36.9	**-11.1**
TMS14	M-11-3	Dentist	54	40.3	**-13.7**
TMS13	M-12-1	Utz Soccer Fields	47	34.5	**-12.5**

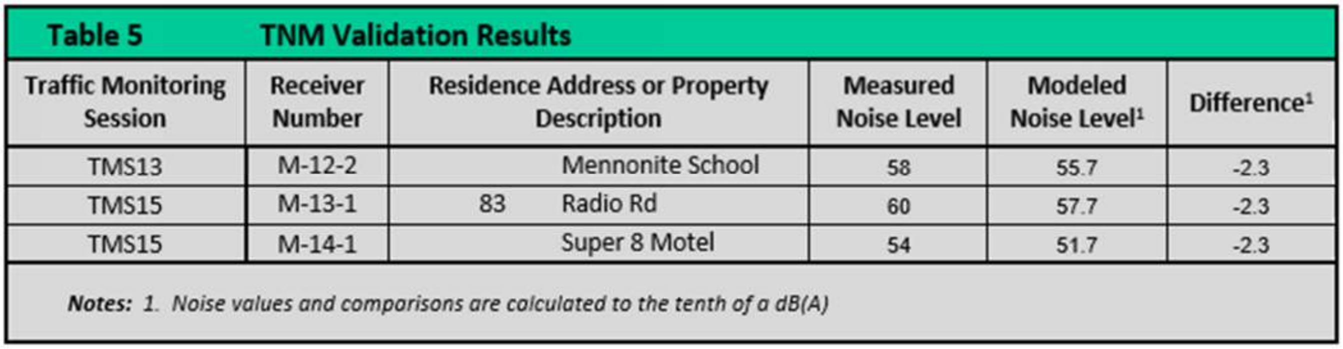


Table 5 TNM Validation Results

Traffic Monitoring Session	Receiver Number	Residence Address or Property Description	Measured Noise Level	Modeled Noise Level[1]	Difference[1]
TMS13	M-12-2	Mennonite School	58	55.7	-2.3
TMS15	M-13-1	83 Radio Rd	60	57.7	-2.3
TMS15	M-14-1	Super 8 Motel	54	51.7	-2.3

***Notes:** 1. Noise values and comparisons are calculated to the tenth of a dB(A)*

Twenty (20) of the 29 noise modeling locations measured noise levels are within three decibels of the modeled TNM 2.5 noise levels and are considered validated. The remaining nine receivers are not applicable for validation, as Per Pub 24 Section 2.5.3 Model Validation Limitations:

> *"These procedures are not applicable in situations where the existing acoustical environment is not dominated by an existing highway traffic noise source. The FHWA TNM is not capable of accurately determining existing noise levels where highway traffic noise is not the dominant contributing acoustical characteristic."*

Due to the location of these receivers, the existing traffic configuration is not near enough to the receivers for TNM to correctly model existing conditions. Therefore, the measured noise levels will be used to measure "substantial increase" impacts.

Validation results and TNM printouts are presented in **Appendix C**.

4.7 Determining Worst-Case Existing Conditions

After the noise model was validated, an existing worst-case noise model was used to predict worst-case existing noise levels within the project area. The witnessed traffic data was replaced in the model with Year 2015 existing worst-case traffic data. Highway traffic noise analysis is modeled using the worst-case existing noise hour within the project area. A peak noise hour was not designated by the information provided, so peak hour volumes were used to be conservative in the screening modeling process.

JMT used manual turning movement counts (TMC) that were collected within the study area in October 2015. TMCs were performed at each study area intersection during the morning and evening peak hour time periods. Additionally, automatic traffic recorder (ATR) counts collected daily traffic volumes at key locations within the network and recorded data for a continuous 72 hours. This existing traffic count data was reviewed, adjusted, and balanced for each corridor to determine the existing worst-case morning and evening peak hour traffic volumes at each study area intersection.

The Year 2015 (Existing Worst-Case) and Year 2042 Build vehicle fleet breakout percentages (cars, motorcycles, medium trucks, and heavy trucks) were determined from the ATR counts conducted in

2015. The posted speed limits were utilized to be conservative in the modeling process. The roadway service volumes were developed based upon the methodologies presented in the Highway Capacity Manual (HCM), 6th Edition.

The Year 2015 Existing Worst-Case traffic volumes from JMT are included in **Appendix D**.

Unless noted otherwise, the existing worst-case noise levels serve as a basis for the PennDOT “substantial increase” noise abatement criteria and are presented in **Table 6** where existing 2015 values are compared with future 2042 Build Condition predicted noise levels. These noise levels are also used as a base value to compare approaching noise levels to the NAC Impact level for each Land Use Category.

5.0 FUTURE HIGHWAY TRAFFIC NOISE ANALYSIS

5.1 Introduction

Future worst-case noise levels are predicted using TNM Version 2.5 for the Alternative 5C 2042 Build conditions. A validated TNM model of existing conditions is used as a base to create the TNM runs for predicting future conditions.

5.2 Predicted Noise Levels

5.2a Predicted Traffic

Traffic volume data utilized for the project was developed from data gathered for the project and provided to SCI by JMT. To develop worst-case 2042 future traffic volumes, a growth rate was determined utilizing the York County Planning Commission (YCPC) 2010 Base and 2040 No Build travel demand models. The growth rate and growth factor for the study area are:

- Growth Rate: 0.76% (annually)
- Growth Factor: 1.21% (2015-2042)

This growth rate was applied to the existing traffic volumes collected as part of this project to determine the worst-case Design Year 2042 Transportation Systems Management (TSM) Alternative traffic volumes. Utilizing the travel time study results, the origin-destination study data, and engineering judgement the No Build traffic volumes were reassigned to the Off-Alignment Build Alternative 5C for the Design Year 2042 scenario. The Year 2015 (Existing Worst-Case) as well as Year 2042 Build traffic volume figures from the report are included in **Appendix D**.

Appendix D also includes Design Year 2042 fleet volumes and speeds for key Alternative 5C roadways modeled in TNM for 2015 Existing Worst-Case and 2042 Build conditions.

5.2b Predicted Noise Level Results

The proposed Alternative 5C roadway alignments and corridor improvements were incorporated into the 2042 Build Condition model and were run to determine future noise levels and final assessment of "warranted" receivers. **Table 6** compares the modeled 2042 Build Condition worst-case noise levels to the Existing Worst-Case Conditions. 'Highlight' (white background) in the Predicted Noise Levels table indicates that receivers are impacted in the 2042 Build Condition with predicted noise levels at or above the appropriate NAC level or with a substantial noise level increase [10 dB(A)] from existing and that a noise mitigation investigation is warranted.

All noise levels are rounded to the nearest whole decibel. Alternative 5C 2042 Build Noise Levels were found to decrease [max. -4 dB(A)] in some areas and increase [max. 29 dB(A)] in others depending on the proposed roadway configuration.

The TNM results from the 2042 predicted noise level analysis are included in **Appendix E**.

Table 6 Impact Noise Level Summary

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2019 Measured Noise Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build[1] [dB(A)]
NSA 1							
M-1-1	5585 Hanover Rd	B	67	64	**67**	**67**	0
R-1-1	5409 Hanover Rd	B	67	N/A	64	56	-8
R-1-2	5473 Hanover Rd	B	67	N/A	58	57	-1
R-1-3	1035 Water Dr	B	67	N/A	49	50	1
R-1-4	5501 Hanover Rd	B	67	N/A	**68**	**69**	1
R-1-5	5525 Hanover Rd	B	67	N/A	58	59	1
R-1-6	Brushtown Baseball Fields	C	67	N/A	51	51	0
R-1-7	5617 Hanover Rd	B	67	N/A	57	56	-1
R-1-8	5663 Hanover Rd	B / C	67	N/A	**69**	**68**	-1
NSA 2							
M-2-1	5430 Hanover Rd	B	67	65	**68**	60	-8
NSA 3							
M-3-1	5530 Hanover Rd	B	67	45	46	58	12
M-3-2	110 St Michaels Way	B	67	42	43	57	14
M-3-3	161 St Michaels Way	B	67	41	44	49	5
R-3-1	5500 Hanover Rd	B	67	N/A	64	64	0
R-3-2	5562 Hanover Rd	B	67	N/A	51	51	0
R-3-3	92 St Michaels Way	B	67	N/A	45	53	8
R-3-4	95 St Michaels Way	B	67	N/A	45	49	4
R-3-5	125 St Michaels Way	B	67	N/A	44	49	5
R-3-6	134 St Michaels Way	B	67	N/A	44	50	6
R-3-7	158 St Michaels Way	B	67	N/A	44	52	8
R-3-8	178 St Michaels Way	B	67	N/A	47	50	3
T-3-1	Villas at Cattail Trail	C	67	N/A	48	51	3

Table 6 **Impact Noise Level Summary**

Receiver Number	Residence Address or Property Description		Land Use Category	NAC Impact Level	2019 Measured Noise Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build[1] [dB(A)]
T-3-2		Villas at Cattail Trail	C	67	N/A	46	51	5
T-3-3		Villas at Cattail Trail	C	67	N/A	47	51	4
T-3-4		Villas at Cattail Trail	C	67	N/A	44	55	11
T-3-5		Villas at Cattail Trail	C	67	N/A	43	59	16
T-3-6		Villas at Cattail Trail	C	67	N/A	42	61	19
T-3-7		Villas at Cattail Trail	C	67	N/A	42	58	16
T-3-8		Villas at Cattail Trail	C	67	N/A	42	55	13
T-3-9		Villas at Cattail Trail	C	67	N/A	42	53	11
T-3-10		Villas at Cattail Trail	C	67	N/A	42	52	10
T-3-11		Villas at Cattail Trail	C	67	N/A	45	52	7
T-3-12		Villas at Cattail Trail	C	67	N/A	46	52	6
T-3-13		Villas at Cattail Trail	C	67	N/A	46	49	3
NSA 4								
M-4-1	310	Sunday Dr	B	67	50	59	63	4
NSA 5								
M-5-1	318	Barley Circle	B	67	48	53	61	8
M-5-2	58	Barley Circle	B	67	49	52	63	11
M-5-3	89	Barley Circle	B	67	38	42	49	7
R-5-1	290	Barley Circle	B	67	N/A	50	58	8
R-5-2	269	Barley Circle	B	67	N/A	43	46	3
R-5-3	311	Barley Circle	B	67	N/A	43	48	5
R-5-4	340	Barley Circle	B	67	N/A	55	58	3
R-5-5	335	Barley Circle	B	67	N/A	41	44	3
R-5-6	327	Barley Circle	B	67	N/A	42	48	6
R-5-7	20	Barley Circle	B	67	N/A	56	56	0
R-5-8	1	Barley Circle	B	67	N/A	42	49	7

Table 6 Impact Noise Level Summary

Receiver Number	Residence Address or Property Description		Land Use Category	NAC Impact Level	2019 Measured Noise Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build[1] [dB(A)]
R-5-9	15	Barley Circle	B	67	N/A	41	45	4
R-5-10	46	Barley Circle	B	67	N/A	56	59	3
R-5-11	43	Barley Circle	B	67	N/A	42	49	7
R-5-12	78	Barley Circle	B	67	N/A	45	57	12
R-5-13	98	Barley Circle	B	67	N/A	45	51	6
NSA 6								
M-6-1[2]	3426	Centennial Rd	B	67	66	**69**	-[2]	-[2]
NSA 7								
M-7-1	3326	Centennial Rd	B	67	66	**67**	**68**	1
M-7-2	271	Friendly Drive	B	67	35	40	45	5
R-7-1	3368	Centennial Rd	B	67	N/A	63	65	2
R-7-2	3294	Centennial Rd	B	67	N/A	65	**66**	1
R-7-3	225	Friendly Drive	B	67	N/A	46	49	3
R-7-4	262	Friendly Drive	B	67	N/A	41	45	4
R-7-5	291	Friendly Drive	B	67	N/A	39	44	5
NSA 8								
M-8-1[3]	5	Tiffany Ct	B	67	39	36	57	18[3]
M-8-2[3]	7	Sease Dr	B	67	45	36	53	8[3]
M-8-3[3]	65	Conewago Dr	B	67	46	38	49	3[3]
R-8-1	9	Tiffany Ct	B	67	N/A	37	49	12
R-8-2	2	Tiffany Ct	B	67	N/A	37	51	14
R-8-3	131	Conewago Dr	B	67	N/A	36	50	14
R-8-4	8	Sease Dr	B	67	N/A	37	62	25
R-8-5	114	Conewago Dr	B	67	N/A	37	45	8
R-8-6	103	Conewago Dr	B	67	N/A	35	48	13
R-8-7	386	Church St	B	67	N/A	37	62	25

Table 6 Impact Noise Level Summary

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2019 Measured Noise Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build[1] [dB(A)]
R-8-8	51 Conewago Dr	B	67	N/A	39	45	6
R-8-9	23 Conewago Dr	B	67	N/A	43	49	6
R-8-10	128 Conewago Dr	B	67	N/A	37	48	11
NSA 9							
M-9-1[3]	28 Franklin Ct	B	67	41	33	52	11[3]
M-9-2	246 Johnathon Dr	B	67	39	36	56	20
M-9-3[3]	279 Johnathon Dr	B	67	39	36	65	26[3]
M-9-4[3]	502 Providence Dr	B	67	43	38	60	17[3]
M-9-5	182 Oxford Ave	B	67	51	51	54	3
R-9-1	203 Vincent Dr	B	67	N/A	56	58	2
R-9-2	234 Vincent Dr	B	67	N/A	39	44	5
R-9-3	247 Vincent Dr	B	67	N/A	37	44	7
R-9-4	31 Franklin Ct	B	67	N/A	36	45	9
R-9-5	93 Franklin Dr	B	67	N/A	35	48	13
R-9-6	231 Johnathon Dr	B	67	N/A	35	54	19
R-9-7	241 Johnathon Dr	B	67	N/A	36	64	28
R-9-8	257 Johnathon Dr	B	67	N/A	36	65	29
R-9-9	276 Johnathon Dr	B	67	N/A	36	55	19
R-9-10	30 Bethel Ct	B	67	N/A	36	48	12
R-9-11	296 Johnathon Dr	B	67	N/A	36	56	20
R-9-12	299 Johnathon Dr	B	67	N/A	37	65	28
R-9-13	317 Johnathon Dr	B	67	N/A	37	65	28
R-9-14	493 Johnathon Dr	B	67	N/A	37	54	17
R-9-15	206 Oxford Ave	B	67	N/A	38	48	10
R-9-16	ABVM Cemetery	C	67	N/A	41	46	5
R-9-17	204 Oxford Ave	B	67	N/A	61	64	3

Table 6 Impact Noise Level Summary

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2019 Measured Noise Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build[1] [dB(A)]
R-9-18	107 Oxford Ave	B	67	N/A	61	63	2
R-9-19	225 Oxford Ave	B	67	N/A	64	**66**	2
R-9-20	86 Franklin Dr	B	67	N/A	34	48	14
C-9-1	ABVM Cemetery	C	67	N/A	38	45	7
C-9-2	ABVM Cemetery	C	67	N/A	39	43	4
C-9-3	ABVM Cemetery	C	67	N/A	41	46	5
C-9-4	ABVM Cemetery	C	67	N/A	42	47	5
C-9-5	ABVM Cemetery	C	67	N/A	38	44	6
C-9-6	ABVM Cemetery	C	67	N/A	39	44	5
C-9-7	ABVM Cemetery	C	67	N/A	40	45	5
C-9-8	ABVM Cemetery	C	67	N/A	41	46	5
C-9-9	ABVM Cemetery	C	67	N/A	38	43	5
C-9-10	ABVM Cemetery	C	67	N/A	39	44	5
C-9-11	ABVM Cemetery	C	67	N/A	39	44	5
C-9-12	ABVM Cemetery	C	67	N/A	40	45	5
C-9-13	ABVM Cemetery	C	67	N/A	38	43	5
C-9-14	ABVM Cemetery	C	67	N/A	39	43	4
C-9-15	ABVM Cemetery	C	67	N/A	39	43	4
C-9-16	ABVM Cemetery	C	67	N/A	40	44	4
C-9-17	ABVM Cemetery	C	67	N/A	37	42	5
C-9-18	ABVM Cemetery	C	67	N/A	38	43	5
C-9-19	ABVM Cemetery	C	67	N/A	39	43	4
C-9-20	ABVM Cemetery	C	67	N/A	37	42	5
NSA 10							
M-10-1	509 Church St	B	67	61	63	64	1
M-10-2	310 Oxford Ave	B	67	54	54	56	2

Table 6 Impact Noise Level Summary

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2019 Measured Noise Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build[1] [dB(A)]
R-10-1	276 Oxford Ave	B	67	N/A	65	**68**	3
NSA 11							
M-11-1	303 Oxford Ave	B	67	65	64	**66**	2
M-11-2[3]	301 Oxford Ave	B	67	48	37	54	6[3]
M-11-3[3]	Trummer Family Dentistry	B	67	54	42	57	3[3]
C-11-1	Historic Cemetery	C	67	N/A	38	45	7
NSA 12							
M-12-1[3]	Utz Soccer Fields	C	67	47	35	45	-2[3]
M-12-2	Menonite School	C	67	58	55	54	-1
R-12-1	Utz Soccer Fields	C	67	N/A	36	44	8
R-12-2	Utz Soccer Fields	C	67	N/A	36	46	10
R-12-3	125 Radio Rd	B	67	N/A	46	47	1
NSA 13							
M-13-1	83 Radio Rd	B	67	60	59	58	-1
R-13-1	51 Radio Rd	B	67	N/A	48	47	-1
NSA 14							
M-14-1	Super 8 Motel	E	72	54	43	44	1

1. *Receivers that warrant the investigation of noise abatement occurs where the predicted noise levels meet any of the following criteria:*
    - *2042 Build Predicted Highway Traffic Noise levels equal or exceeds 66 dB(A) for Land Use Category B (Residential) & C*
    - *2042 Build Predicted Highway Traffic Noise levels equal or exceeds 71 dB(A) for Land Use Category E (Commercial & Hotel)*
    - *2042 Build Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise*
2. *M-6-1 - Residence removed from proposed noise analysis due to anticipated ROW displacement.*
3. *Due to lack of traffic noise at location of measured receivers, the 2019 Measured Noise Level was used as the Existing Noise level for "substantial increase" impacts*

6.0 HIGHWAY TRAFFIC NOISE MITIGATION ALTERNATIVES

6.1 Impact Analysis and Noise Abatement Warrants

PennDOT defines traffic noise impacts if the noise levels equal or exceed the defined Noise Abatement Criteria (NAC) for the appropriate Land Use Activity Category. For a Type I analysis, a noise study area warrants consideration of noise abatement if one of the following criteria is met:

- Predicted Design Year Highway Traffic Noise levels equal or exceed the NAC criteria in **Table 2**, or
- Predicted Design Year Highway Traffic Noise levels are predicted to substantially increase by 10 dB(A) or more over existing levels.

As shown in **Table 6**, a total of 44 receivers are predicted to be impacted under the 2042 Build Condition along the Alternative 5C corridor limits. Eight of the impacted receivers, representing 21 residences, have worst-case traffic noise levels that equal or exceed the NAC [66 dB(A)] for the 2042 Build Condition. Thirty-six (36) of the impacted receivers, representing 87 residences, a soccer field, and a walking trail, have predicted traffic noise levels with substantial increases [10 dB(A)] over existing levels. Equivalent Residential Units (ERUs) were calculated for non-residential sensitive areas. ERU calculations can be found in **Appendix E**.

The results are detailed and distributed across the Alternative 5C corridor as follows and shown on **Maps 16 - 21**:

NSAs 2, 4, 13, and 14

Build 2042 noise levels did not exceed the NAC criteria or substantially increase by 10 dB(A). No impacts are calculated for these NSAs; therefore, no mitigation abatement is warranted, and no further study is needed in these areas.

NSA 1 and 7

These NSAs have Build 2042 noise levels that exceed the NAC criteria or substantially increase by 10 dB(A), but the dimension of any noise barrier would be estimated at four times the distance measured from the roadway to receiver and tall enough to break the line of sight between the receiver and the cars. Estimated wall lengths for these two NSAs are a minimum of 140’ and this mitigation is not feasible due to the locations of driveways and access points. While abatement is warranted, mitigation is not feasible, and no further study is needed in these areas.

NSA 3, 5, 8, 9, 10, 11, and 12

These NSAs have Build 2042 noise levels that exceed the NAC criteria or substantially increase by 10 dB(A) and mitigation appears to be feasible from a constructability standpoint. Therefore, abatement will be considered and analyzed for acoustic feasibility and reasonableness.

6.2 Abatement Considerations

After determining areas where mitigation is warranted for the 2042 Alternative 5C Build condition, several noise barrier designs were investigated for feasibility and reasonableness. For preliminary analysis purposes noise barriers were considered to be the only feasible form of noise mitigation but earth noise berms will be considered where feasible during the Final Design noise study.

Noise abatement is warranted for the 2042 Build condition and noise barrier options were evaluated at the following locations along the Alternative 5C limits:

- NSA 3 – Houses & businesses in northwest quadrant of SR 0116 & Sunday Dr Intersection
- NSA 5 – Barley Circle neighborhood
- NSA 8 – Conewago Drive neighborhood
- NSA 9 – Sherry Village neighborhood
- NSA 10 – Houses bounded by Church St, Oxford Ave, and Alternative 5C Eisenhower Dr
- NSA 11 – Houses & businesses bounded by Oxford Ave, High St, & Alternative 5C Eisenhower Dr
- NSA 12 – UTZ Soccer Fields

Noise barrier alignments were set based on the existing topography, Off-Alignment Alternative 5C preliminary roadway alignment, and impacted property limits to provide the most cost-effective layout. The exact alignment location of any warranted, feasible, and reasonable barriers will be determined in Final Design with coordination with the roadway and structural design team. The optimized height of the noise barriers used PennDOT noise barrier abatement design goals, as outlined in PennDOT Pub. No. 24 (dated November 2015), as well as consideration of the feasibility and reasonableness criteria as outlined below.

The Pennsylvania Department of Transportation is committed to the construction of warranted, feasible, and reasonable highway traffic noise abatement measures at the noise-impacted locations identified in **Table 6** contingent upon the following conditions: 2042 Build Condition TNM modeling results; analysis and determination of the feasibility and reasonableness of highway traffic noise abatement measures methodology and criteria; community input regarding desires, types, heights and locations as well as aesthetic considerations; and safety and engineering aspects as related to the roadway user and the adjacent property owner.

6.2a Feasibility Criteria

Feasibility criteria for noise barrier evaluation is listed below:

- Can a Highway Traffic Noise reduction of at least 5 dB(A) be achieved at the majority of the impacted Receiver Units (i.e., 50% or greater)?
- Can the noise barrier be designed and physically constructed at the proposed location?
- Can the noise barrier be constructed without causing a safety problem?
- Can the noise barrier be constructed without restricting access to vehicular or pedestrian travel?
- Can the noise barrier be constructed in a manner that allows for required maintenance and inspection operations?
- Can the noise barrier be constructed in a manner that allows utilities to adequately function?
- Can the noise barrier be constructed in a manner that allows drainage features to adequately function?

6.2b Reasonableness Criteria

Reasonableness criteria for noise barrier evaluation are listed below:

- Do at least 50% of the impacted and benefited units desire the noise barrier?
    - This criterion is only considered during the Final Design phase.
- Is the area (SF) per Benefited Receiver Unit less than or equal to the Maximum Square Footage of Abatement Per Benefited Receiver (MaxSF/BR) value of 2,000 SF?
- Does the noise wall reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receiver?

6.3 Design Discussion Overview

The barriers were initially analyzed at various constant heights and then using the results of the constant height analysis, optimized to determine a cost-effective barrier while meeting the PennDOT noise barrier abatement goals. **Table ES.1** (found in the Executive Summary) summarizes and **Appendix F** details the noise barrier analysis findings that are outlined below. **Appendix I** contains the draft versions of the Warranted, Feasible, and Reasonable Worksheets for applicable NSAs.

6.4 NSA 3 Barrier Design

NSA 3 contains 51 Equivalent Residential Units (ERUs.) The NSA 3 Barrier was laid out to protect impacted mixed use and trail receivers M-3-1, M-3-2, and T-4 through T-10. NSA 3 contains houses and businesses in the northwest quadrant of SR 0116 & Sunday Dr Intersection including the Cattail Villas neighborhood and Cattail Villas Walking Trail, as shown on **Map 16**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension. It is set approximately 100’ south of the proposed roadway centerline.

The preliminary optimized barrier is 2,073 feet long, ranges in height from 11 feet to 15 feet, and has an average height of 12.5 feet. The total area from TNM v2.5 for the optimized barrier is 25,926 SF. A maximum of 13 dB(A) noise level reduction (Insertion Loss) can be achieved at the impacted receivers with 92% having a 5 dB(A) reduction or greater; therefore, meeting the feasibility criteria in this area.

There are nine (9) Benefited Receivers (M-3-1, M-3-2, R-3-3, and T-4 through T-9) representing 13 Equivalent Residential Units (ERUs) with Insertion Loss greater than 5 dB(A). Because the Area per Benefited Receiver for the optimized barrier is 1,994 SF/BR, the 2,000 SF/BR maximum reasonableness criteria is met. The reasonableness criteria to reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receiver is also met. Preliminary studies assume that at least 50% of the impacted and benefited receiver units desire the noise barrier. **Therefore, the NSA 3 Preliminary Barrier is feasible and reasonable.**

Table 7 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained, and the barrier design data for various constant height barriers and the optimized barrier that were analyzed. **Appendix I** contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 3.

TABLE 7 **NSA 3 Sound Barrier Analysis**

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss																					
			8 ft Constant Height		10 ft Constant Height		12 ft Constant Height		14 ft Constant Height		16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		22 ft Constant Height		24 ft Constant Height		26 ft Constant Height		Optimized Height 11'-15' (Ave. 12.51')	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-3-1	59	1	55	4	54	4	54	5	53	5	53	6	53	6	53	6	52	6	52	6	52	6	54	**5**
M-3-2	58	4	53	5	52	6	50	8	49	9	48	10	48	10	47	11	47	11	47	11	46	12	49	**9**
M-3-3	49	4	49	0	48	1	48	1	48	2	47	2	47	3	46	3	46	3	46	3	46	3	48	1
R-3-1	64	3	64	0	64	0	64	0	64	0	64	0	64	0	64	0	64	0	64	0	64	0	64	0
R-3-2	51	5	51	0	51	0	51	0	51	1	51	1	51	1	51	1	51	1	51	1	51	1	51	0
R-3-3	53	2	50	3	50	3	49	4	48	5	48	5	47	6	47	6	47	6	47	6	47	6	49	**5**
R-3-4	49	4	48	1	47	2	47	2	46	3	46	3	46	4	46	4	45	4	45	4	45	4	47	3
R-3-5	49	2	48	1	48	1	48	2	47	3	46	3	46	4	45	4	45	4	45	5	45	5	47	2
R-3-6	50	4	50	1	49	1	49	1	48	2	48	3	47	3	47	3	47	3	47	4	47	4	50	1
R-3-7	52	4	51	1	51	1	50	2	50	2	49	3	48	3	48	4	48	4	48	4	48	4	50	2
R-3-8	50	5	50	0	50	0	50	0	50	0	50	1	50	1	50	1	50	1	50	1	50	1	50	0
T-1	51	1	50	1	50	1	49	1	49	2	49	2	49	2	49	2	49	2	49	2	49	2	49	1
T-2	52	1	49	2	49	3	48	3	48	4	48	4	47	4	47	5	47	5	47	5	47	5	48	3
T-3	51	1	49	2	49	2	49	3	48	3	48	3	48	3	48	4	48	4	48	4	47	4	48	3
T-4	55	1	51	4	50	5	49	7	48	7	48	8	47	8	47	8	47	9	46	9	46	9	48	**7**
T-5	59	1	52	7	50	9	49	10	48	11	48	11	47	12	47	12	47	13	46	13	46	13	48	**11**
T-6	61	1	53	8	51	10	49	12	48	13	47	14	47	14	46	15	46	15	45	16	45	16	48	**13**
T-7	58	1	52	7	50	9	49	9	48	10	48	11	47	11	47	12	46	12	46	12	46	13	49	**10**
T-8	56	1	52	4	51	5	49	7	48	7	48	8	47	9	47	9	46	9	46	10	46	10	49	**7**
T-9	54	1	51	2	51	3	50	4	48	5	48	6	47	6	47	7	46	7	46	8	46	8	49	**5**
T-10	52	1	50	2	50	2	49	3	48	4	47	5	47	5	47	5	46	6	46	6	46	6	49	3
T-11	52	1	51	1	51	1	50	2	50	2	49	3	49	3	48	3	48	4	48	4	48	4	50	1
T-12	52	1	51	0	51	0	51	1	51	1	50	1	50	1	50	2	50	2	50	2	50	2	51	1
T-13	49	1	49	0	49	0	49	0	48	1	48	1	48	1	48	1	48	2	47	2	47	2	49	0
Barrier Length (Feet)			2,642		2,642		2,642		2,642		2,642		2,642		2,642		2,642		2,642		2,642		**2,073**	
Area (square feet), from TNM			21,136		26,419		31,703		36,987		42,271		47,555		52,839		58,123		63,407		68,690		**25,926**	
Total # Receptor units receiving at least 5 dBA insertion loss			7		9		10		13		14		14		15		15		17		17		**13**	
Area / # of 5dBA Benefited Receptors			3,019		2,935		3,170		2,845		3,019		3,397		3,523		3,875		3,730		4,041		**1,994**	
Exterior Noise levels reduced by at least 7 DBA for 1 benefitted Receptor?			YES		YES		YES		YES		YES		YES		YES		YES		YES		YES		**YES**	

Notes:
1. A Receptor Number beginning with "M" represents a field measured location and a Receptor Number beginning with "R", "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria:
Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.
5. Orange highlighted cells indicate insertion losses of 5 or greater for the Optimized Barrier.

6.5 NSA 5 Barrier Design

NSA 5 contains 44 ERUs. The NSA 5 Barrier was laid out to protect impacted residential receivers M-5-2 and R-5-12 in the Barley Circle neighborhood. It contains single-family homes on the east side of Sunday Drive bounded by the project limits and Centennial Road as shown on **Map 17**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension. It is set approximately 100' east of the proposed roadway centerline.

The preliminary optimized barrier is 1,038 feet long, ranges in height from 8 feet to 13 feet, and has an average height of 12.4 feet. The total area from TNM v2.5 for the optimized barrier is 12,875 SF. A maximum of 9 dB(A) noise level reduction (Insertion Loss) can be achieved at the impacted receivers with 100% having a 5 dB(A) reduction or greater; therefore, meeting the feasibility criteria in this area.

There are three (3) Benefited Receivers (M-5-2, R-5-10, and R-5-12) representing 6 Equivalent Residential Units (ERUs) with Insertion Loss greater than 5 dB(A). Because the Area per Benefited Receiver for the preliminary optimized barrier is 2,146 SF/BR, the 2,000 SF/BR maximum reasonableness criteria is not met but is very close. There is a high potential for NSA 5 to pass the MaxSF/BR reasonableness criteria during the final design process using refined noise modeling methods. The reasonableness criteria to reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receiver is met. Preliminary studies assume that at least 50% of the impacted and benefited receiver units desire the noise barrier. **Therefore, the NSA 5 Preliminary Barrier is feasible and potentially reasonable.**

Table 8 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained, and the barrier design data for various constant height barriers and the optimized barrier that were analyzed. **Appendix I** contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 5.

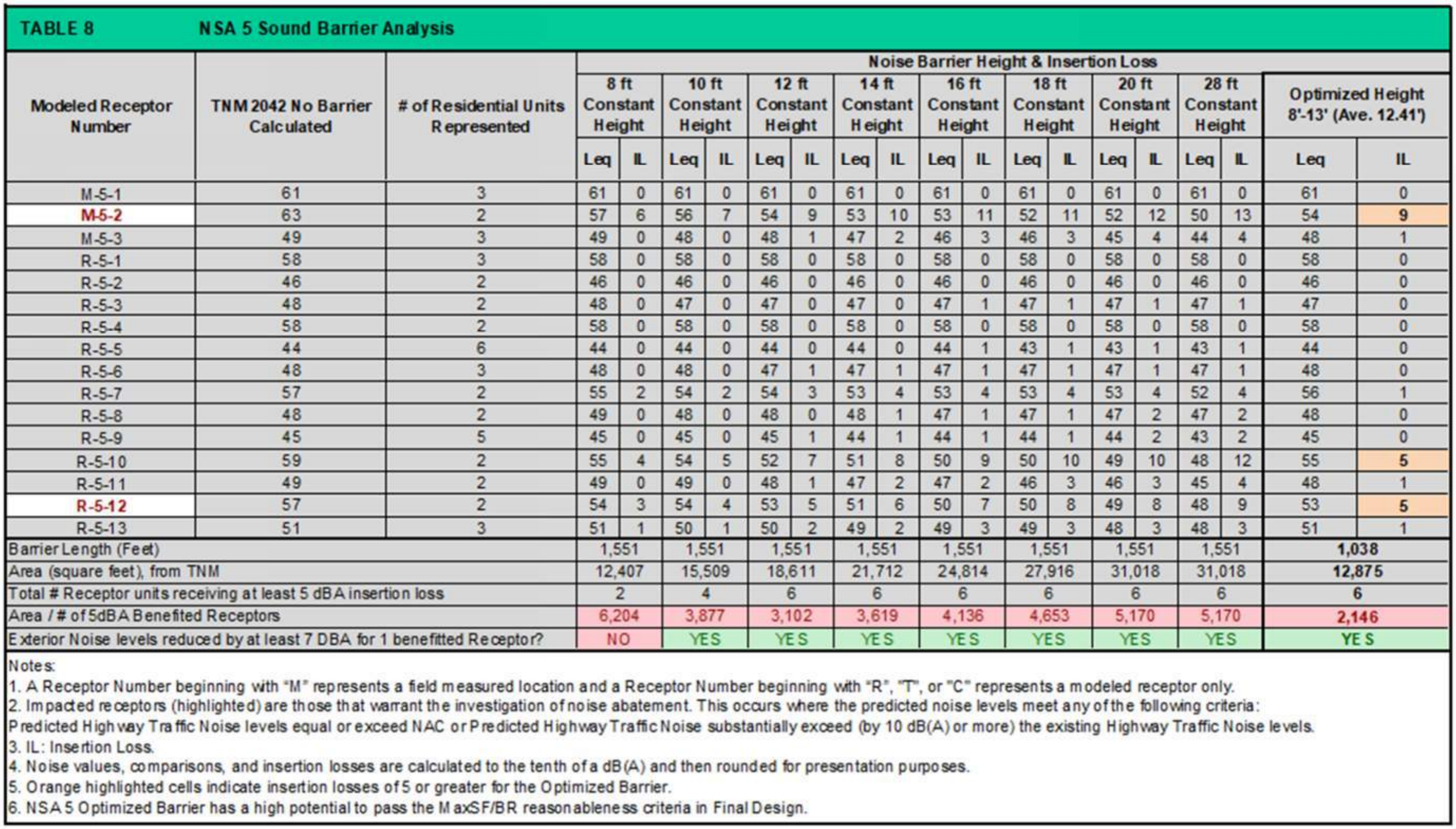


TABLE 8 **NSA 5 Sound Barrier Analysis**

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss																	
			8 ft Constant Height		10 ft Constant Height		12 ft Constant Height		14 ft Constant Height		16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		28 ft Constant Height		Optimized Height 8'-13' (Ave. 12.41')	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-5-1	61	3	61	0	61	0	61	0	61	0	61	0	61	0	61	0	61	0	61	0
M-5-2	63	2	57	6	56	7	54	9	53	10	53	11	52	11	52	12	50	13	54	9
M-5-3	49	3	49	0	48	0	48	1	47	2	46	3	46	3	45	4	44	4	48	1
R-5-1	58	3	58	0	58	0	58	0	58	0	58	0	58	0	58	0	58	0	58	0
R-5-2	46	2	46	0	46	0	46	0	46	0	46	0	46	0	46	0	46	0	46	0
R-5-3	48	2	48	0	47	0	47	0	47	0	47	1	47	1	47	1	47	1	47	0
R-5-4	58	2	58	0	58	0	58	0	58	0	58	0	58	0	58	0	58	0	58	0
R-5-5	44	6	44	0	44	0	44	0	44	0	44	1	43	1	43	1	43	1	44	0
R-5-6	48	3	48	0	48	0	47	1	47	1	47	1	47	1	47	1	47	1	48	0
R-5-7	57	2	55	2	54	2	54	3	53	4	53	4	53	4	53	4	52	4	56	1
R-5-8	48	2	49	0	48	0	48	0	48	1	47	1	47	1	47	2	47	2	48	0
R-5-9	45	5	45	0	45	0	45	1	44	1	44	1	44	1	44	2	43	2	45	0
R-5-10	59	2	55	4	54	5	52	7	51	8	50	9	50	10	49	10	48	12	55	5
R-5-11	49	2	49	0	49	0	48	1	47	2	47	2	46	3	46	3	45	4	48	1
R-5-12	57	2	54	3	54	4	53	5	51	6	50	7	50	8	49	8	48	9	53	5
R-5-13	51	3	51	1	50	1	50	2	49	2	49	3	49	3	48	3	48	3	51	1
Barrier Length (Feet)			1,551		1,551		1,551		1,551		1,551		1,551		1,551		1,551		**1,038**	
Area (square feet), from TNM			12,407		15,509		18,611		21,712		24,814		27,916		31,018		31,018		**12,875**	
Total # Receptor units receiving at least 5 dBA insertion loss			2		4		6		6		6		6		6		6		**6**	
Area / # of 5dBA Benefited Receptors			6,204		3,877		3,102		3,619		4,136		4,653		5,170		5,170		**2,146**	
Exterior Noise levels reduced by at least 7 DBA for 1 benefitted Receptor?			NO		YES		YES		YES		YES		YES		YES		YES		**YES**	

Notes:
1. A Receptor Number beginning with "M" represents a field measured location and a Receptor Number beginning with "R", "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria:
Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.
5. Orange highlighted cells indicate insertion losses of 5 or greater for the Optimized Barrier.
6. NSA 5 Optimized Barrier has a high potential to pass the MaxSF/BR reasonableness criteria in Final Design.

6.6 NSA 8 Barrier Design

NSA 8 contains 95 ERUs. The NSA 8 Barrier was laid out to protect impacted residential receivers M-8-1, R-8-1, R-8-2, R-8-3, R-8-4, R-8-6, R-8-7, and R-8-10 that all have substantial noise level increases predicted. NSA 8 consists of single and multi-family homes on the south side of the proposed Alternative 5C Eisenhower Drive Extension bounded by the project limits and Church Street in the Conewago Drive neighborhood, as shown on **Map 18**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension. It is set approximately 100' south of the proposed roadway centerline.

The preliminary optimized barrier is 2,223 feet long, ranges in height from 20 feet to 28 feet, and has an average height of 26.55 feet. The total area from TNM v2.5 for the optimized barrier is 59,027 SF. A maximum of 14 dB(A) noise level reduction (Insertion Loss) can be achieved at the impacted receivers with 100% having a 5 dB(A) reduction or greater; therefore, meeting the feasibility criteria in this area.

There are 10 Benefited Receivers (M-8-1, M-8-2, M-8-3, R-8-1, R-8-2, R-8-3, R-8-4, R-8-6, R8-7, and R-8-10) representing 48 Equivalent Residential Units (ERUs) with Insertion Loss greater than 5 dB(A). Because the Area per Benefited Receiver for the optimized barrier is 1,230 SF/BR, the 2,000 SF/BR maximum reasonableness criteria is met. The reasonableness criteria to reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receiver is also met. Preliminary studies assume that at least 50% of the impacted and benefited receiver units desire the noise barrier. **Therefore, the NSA 8 Preliminary Barrier is feasible and reasonable.**

Table 9 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained, and the barrier design data for various constant height barriers and the optimized barrier that were analyzed. **Appendix I** contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 8.

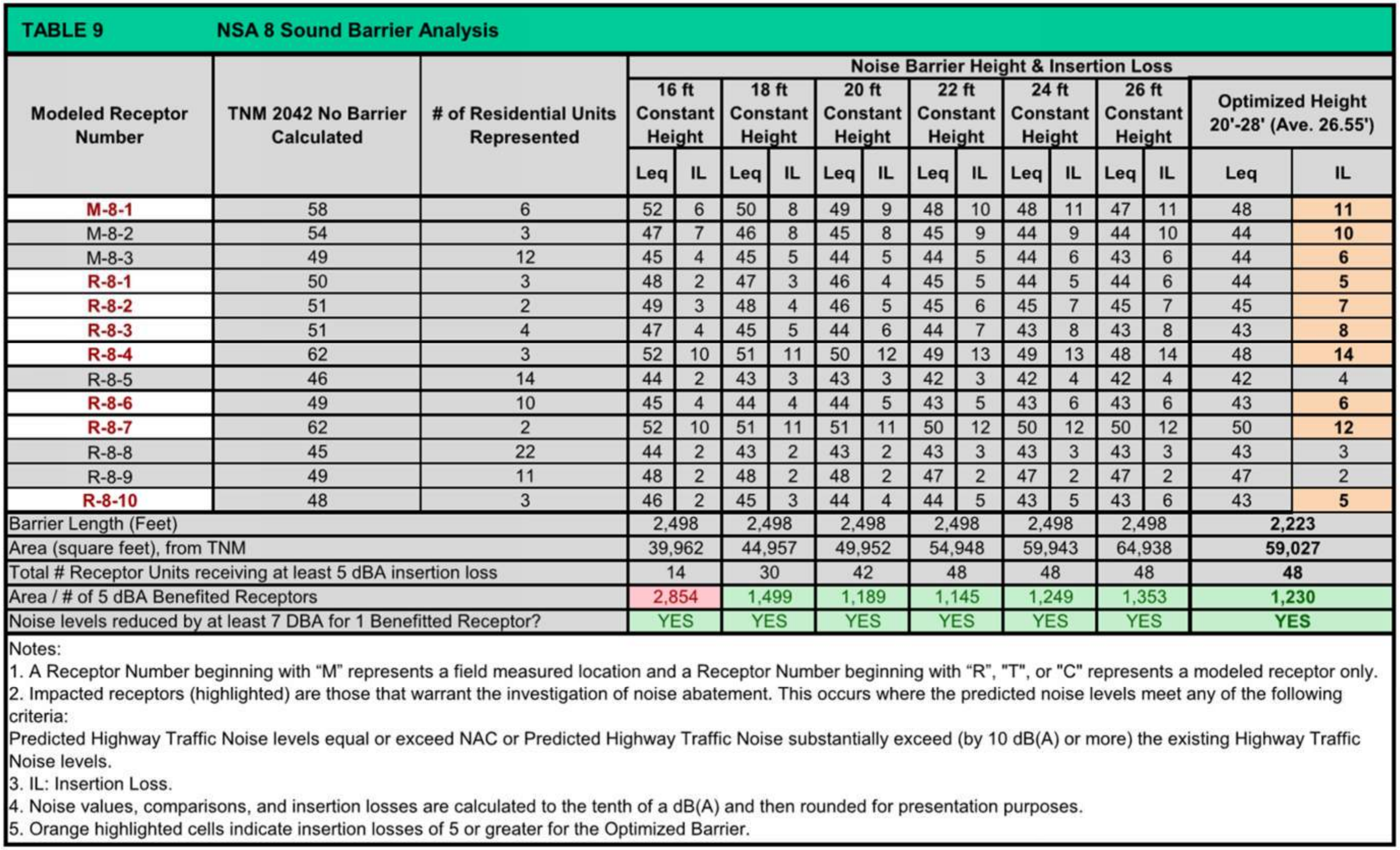


TABLE 9 **NSA 8 Sound Barrier Analysis**

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss													
			16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		22 ft Constant Height		24 ft Constant Height		26 ft Constant Height		Optimized Height 20'-28' (Ave. 26.55')	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-8-1	58	6	52	6	50	8	49	9	48	10	48	11	47	11	48	**11**
M-8-2	54	3	47	7	46	8	45	8	45	9	44	9	44	10	44	**10**
M-8-3	49	12	45	4	45	5	44	5	44	5	44	6	43	6	44	**6**
R-8-1	50	3	48	2	47	3	46	4	45	5	44	5	44	6	44	**5**
R-8-2	51	2	49	3	48	4	46	5	45	6	45	7	45	7	45	**7**
R-8-3	51	4	47	4	45	5	44	6	44	7	43	8	43	8	43	**8**
R-8-4	62	3	52	10	51	11	50	12	49	13	49	13	48	14	48	**14**
R-8-5	46	14	44	2	43	3	43	3	42	3	42	4	42	4	42	4
R-8-6	49	10	45	4	44	4	44	5	43	5	43	6	43	6	43	**6**
R-8-7	62	2	52	10	51	11	51	11	50	12	50	12	50	12	50	**12**
R-8-8	45	22	44	2	43	2	43	2	43	3	43	3	43	3	43	3
R-8-9	49	11	48	2	48	2	48	2	47	2	47	2	47	2	47	2
R-8-10	48	3	46	2	45	3	44	4	44	5	43	5	43	6	43	**5**
Barrier Length (Feet)			2,498		2,498		2,498		2,498		2,498		2,498		**2,223**	
Area (square feet), from TNM			39,962		44,957		49,952		54,948		59,943		64,938		**59,027**	
Total # Receptor Units receiving at least 5 dBA insertion loss			14		30		42		48		48		48		**48**	
Area / # of 5 dBA Benefited Receptors			2,854		1,499		1,189		1,145		1,249		1,353		**1,230**	
Noise levels reduced by at least 7 DBA for 1 Benefitted Receptor?			YES		YES		YES		YES		YES		YES		**YES**	

Notes:
1. A Receptor Number beginning with "M" represents a field measured location and a Receptor Number beginning with "R", "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria:
Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.
5. Orange highlighted cells indicate insertion losses of 5 or greater for the Optimized Barrier.

6.7 NSA 9 Barrier Design

NSA 9 contains 75 ERUs. The NSA 9 Barrier was laid out to protect impacted residential receivers M-9-1, M-9-2, M-9-3, M-9-4, R-9-5 through R-9-15, R-9-19, and R-9-20. NSA 9 contains single-family and multi-family homes in the Sherry Village neighborhood along with the AVBM Cemetery, as shown on **Map 19**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension. It is set approximately 100' south of the proposed roadway centerline.

The preliminary optimized barrier is 1,902 feet long, ranges in height from 16 feet to 20 feet, and has an average height of 19.4 feet. The total area from TNM v2.5 for the optimized barrier is 36,927 SF. A maximum of 14 dB(A) noise level reduction (Insertion Loss) can be achieved at the impacted receivers with 78% having a 5 dB(A) reduction or greater; therefore, meeting the feasibility criteria in this area.

There are 13 Benefited Receivers (M-9-1, M-9-2, M-9-3, M-9-4, R-9-5 through R-9-9, and R-9-11 through R-9-14) representing 36 Equivalent Residential Units (ERUs) with Insertion Loss greater than 5 dB(A). Because the Area per Benefited Receiver for the optimized barrier is 1,902 SF/BR, the maximum 2,000 SF/BR reasonableness criteria is met. The reasonableness criteria to reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receiver is also met. Preliminary studies assume that at least 50% of the impacted and benefited receiver units desire the noise barrier. **Therefore, the NSA 9 Preliminary Barrier is feasible and reasonable.**

Table 10 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained, and the barrier design data for various constant height barriers and the optimized barrier that were analyzed. **Appendix I** contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 9.

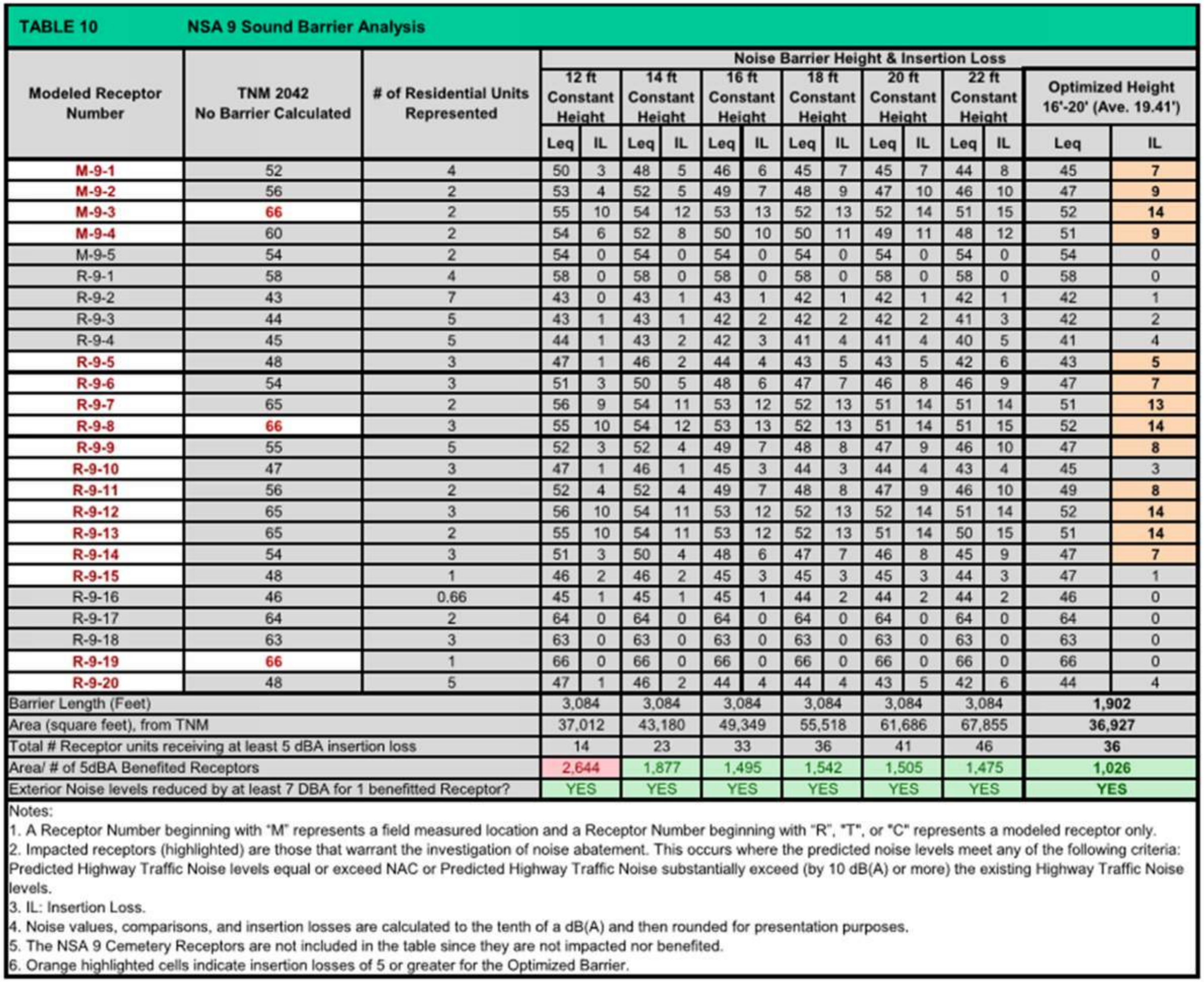


TABLE 10 **NSA 9 Sound Barrier Analysis**

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss													
			12 ft Constant Height		14 ft Constant Height		16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		22 ft Constant Height		Optimized Height 16'-20' (Ave. 19.41')	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-9-1	52	4	50	3	48	5	46	6	45	7	45	7	44	8	45	7
M-9-2	56	2	53	4	52	5	49	7	48	9	47	10	46	10	47	9
M-9-3	66	2	55	10	54	12	53	13	52	13	52	14	51	15	52	14
M-9-4	60	2	54	6	52	8	50	10	50	11	49	11	48	12	51	9
M-9-5	54	2	54	0	54	0	54	0	54	0	54	0	54	0	54	0
R-9-1	58	4	58	0	58	0	58	0	58	0	58	0	58	0	58	0
R-9-2	43	7	43	0	43	1	43	1	42	1	42	1	42	1	42	1
R-9-3	44	5	43	1	43	1	42	2	42	2	42	2	41	3	42	2
R-9-4	45	5	44	1	43	2	42	3	41	4	41	4	40	5	41	4
R-9-5	48	3	47	1	46	2	44	4	43	5	43	5	42	6	43	5
R-9-6	54	3	51	3	50	5	48	6	47	7	46	8	46	9	47	7
R-9-7	65	2	56	9	54	11	53	12	52	13	51	14	51	14	51	13
R-9-8	66	3	55	10	54	12	53	13	52	13	51	14	51	15	52	14
R-9-9	55	5	52	3	52	4	49	7	48	8	47	9	46	10	47	8
R-9-10	47	3	47	1	46	1	45	3	44	3	44	4	43	4	45	3
R-9-11	56	2	52	4	52	4	49	7	48	8	47	9	46	10	49	8
R-9-12	65	3	56	10	54	11	53	12	52	13	52	14	51	14	52	14
R-9-13	65	2	55	10	54	11	53	12	52	13	51	14	50	15	51	14
R-9-14	54	3	51	3	50	4	48	6	47	7	46	8	45	9	47	7
R-9-15	48	1	46	2	46	2	45	3	45	3	45	3	44	3	47	1
R-9-16	46	0.66	45	1	45	1	45	1	44	2	44	2	44	2	46	0
R-9-17	64	2	64	0	64	0	64	0	64	0	64	0	64	0	64	0
R-9-18	63	3	63	0	63	0	63	0	63	0	63	0	63	0	63	0
R-9-19	66	1	66	0	66	0	66	0	66	0	66	0	66	0	66	0
R-9-20	48	5	47	1	46	2	44	4	44	4	43	5	42	6	44	4
Barrier Length (Feet)			3,084		3,084		3,084		3,084		3,084		3,084		**1,902**	
Area (square feet), from TNM			37,012		43,180		49,349		55,518		61,686		67,855		**36,927**	
Total # Receptor units receiving at least 5 dBA insertion loss			14		23		33		36		41		46		**36**	
Area/ # of 5dBA Benefited Receptors			2,644		1,877		1,495		1,542		1,505		1,475		**1,026**	
Exterior Noise levels reduced by at least 7 DBA for 1 benefitted Receptor?			YES		YES		YES		YES		YES		YES		**YES**	

Notes:
1. A Receptor Number beginning with "M" represents a field measured location and a Receptor Number beginning with "R", "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria: Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.
5. The NSA 9 Cemetery Receptors are not included in the table since they are not impacted nor benefited.
6. Orange highlighted cells indicate insertion losses of 5 or greater for the Optimized Barrier.

6.8 NSA 10 Barrier Design

NSA 10 contains 6 ERUs. The NSA 10 Barrier was laid out to protect impacted residential receiver R-10-1. NSA 10 contains single-family homes along Oxford Avenue, as shown on **Map 20**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension that crosses Oxford Ave through a proposed round-a-bout. A preliminary barrier is set approximately 100’ north of the proposed roadway centerline.

Table 11 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained and the barrier design data for various constant height barriers that were analyzed. A maximum of 1 dB(A) noise level reduction (Insertion Loss) can be achieved at the impacted receiver. Even the 28’ constant height barrier does not receive 5 dB(A) or greater reduction (0%); therefore, not meeting the feasibility criteria in this area. **The NSA 10 Preliminary Barrier is not feasible and not optimized for reasonableness.**

Appendix I contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 10.

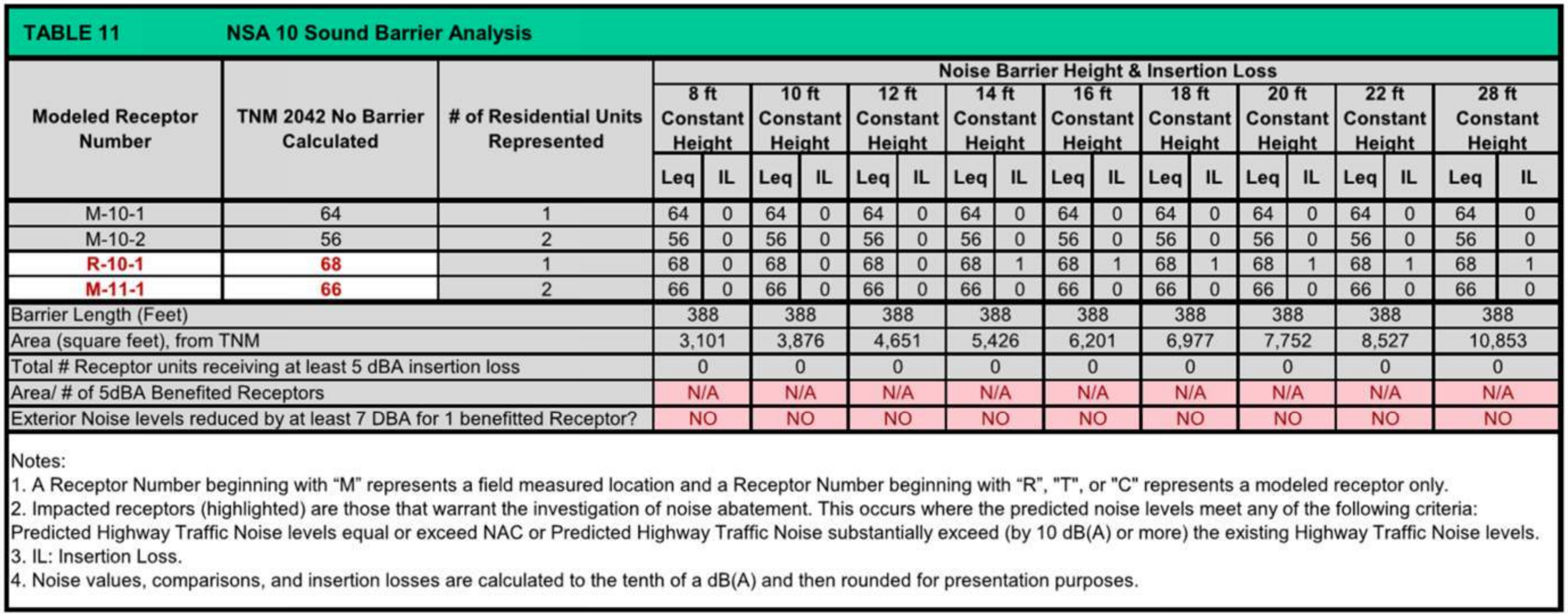


TABLE 11 NSA 10 Sound Barrier Analysis

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss																	
			8 ft Constant Height		10 ft Constant Height		12 ft Constant Height		14 ft Constant Height		16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		22 ft Constant Height		28 ft Constant Height	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-10-1	64	1	64	0	64	0	64	0	64	0	64	0	64	0	64	0	64	0	64	0
M-10-2	56	2	56	0	56	0	56	0	56	0	56	0	56	0	56	0	56	0	56	0
R-10-1	**68**	1	68	0	68	0	68	0	68	1	68	1	68	1	68	1	68	1	68	1
M-11-1	**66**	2	66	0	66	0	66	0	66	0	66	0	66	0	66	0	66	0	66	0
Barrier Length (Feet)			388		388		388		388		388		388		388		388		388	
Area (square feet), from TNM			3,101		3,876		4,651		5,426		6,201		6,977		7,752		8,527		10,853	
Total # Receptor units receiving at least 5 dBA insertion loss			0		0		0		0		0		0		0		0		0	
Area/ # of 5dBA Benefited Receptors			N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
Exterior Noise levels reduced by at least 7 DBA for 1 benefitted Receptor?			NO		NO		NO		NO		NO		NO		NO		NO		NO	

Notes:
1. A Receptor Number beginning with “M” represents a field measured location and a Receptor Number beginning with “R”, "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria: Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.

6.9 NSA 11 Barrier Design

NSA 11 contains 3 ERUs. The NSA 11 Barrier was laid out to protect impacted residential receiver M-11-1. NSA 11 contains single-family homes along Oxford Avenue and the Alternative 5C alignment, as shown on **Map 20**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension that crosses Oxford Ave through a proposed round-a-bout. A preliminary barrier is set approximately 100' north of the proposed roadway centerline.

The preliminary optimized barrier is 751 feet long, ranges in height from 16 feet to 20 feet, and has an average height of 17.4 feet. The total area from TNM v2.5 for the optimized barrier is 13,045 SF. A maximum of 5 dB(A) noise level reduction (Insertion Loss) can be achieved at a non-impacted receiver with none of the impacted receivers having a 5 dB(A) or greater reduction; therefore, not meeting the feasibility criteria in this area.

There is 1 Benefited Receiver (M-11-2) representing 1 Equivalent Residential Units (ERUs) with Insertion Loss equal to 5 dB(A). Because the Area per Benefited Receiver for the optimized barrier is 13,045 SF/BR, the maximum 2,000 SF/BR reasonableness criteria is not met. The reasonableness criteria to reduce design year exterior noise levels by at least 7 dB(A) for at least one benefited receiver is also not met. **Therefore, the NSA 11 Preliminary Barrier is not feasible and not reasonable.**

Table 12 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained, and the barrier design data for various constant height barriers and the optimized barrier that were analyzed. **Appendix I** contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 11.

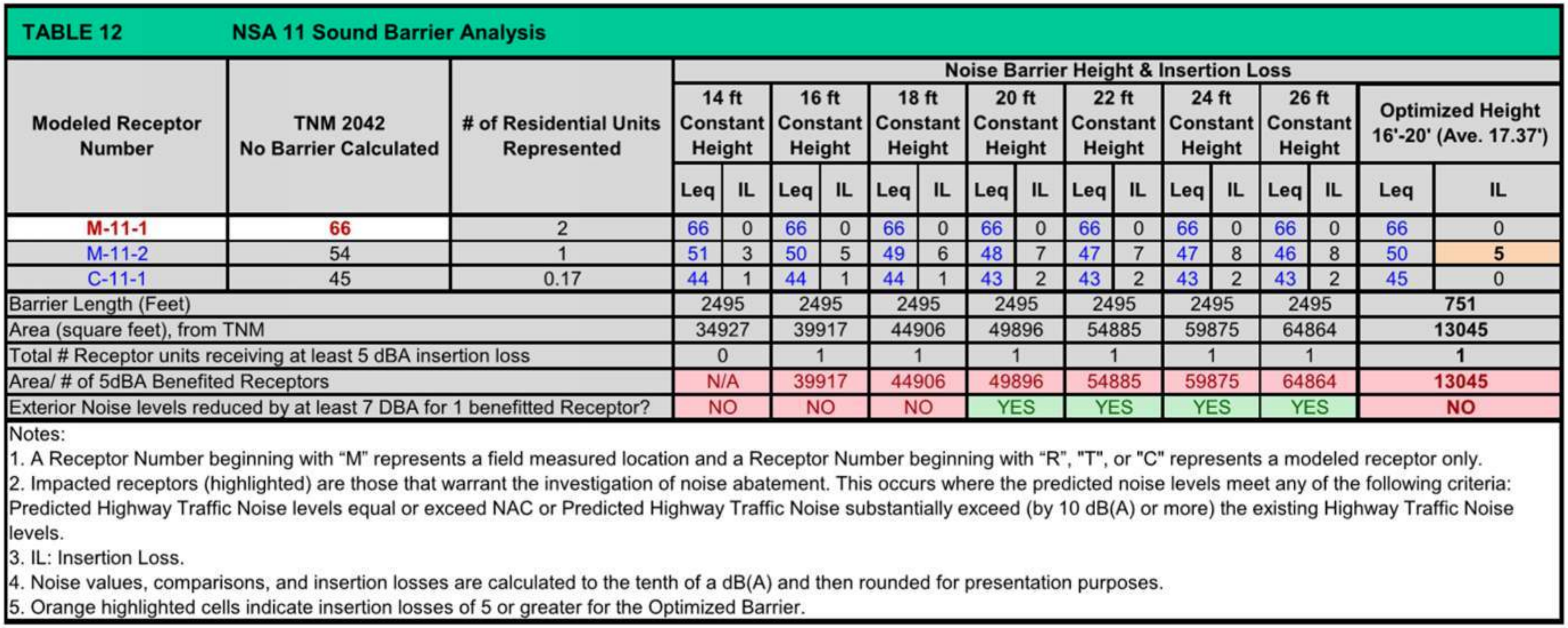


TABLE 12 **NSA 11 Sound Barrier Analysis**

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss															
			14 ft Constant Height		16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		22 ft Constant Height		24 ft Constant Height		26 ft Constant Height		Optimized Height 16'-20' (Ave. 17.37')	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-11-1	66	2	66	0	66	0	66	0	66	0	66	0	66	0	66	0	66	0
M-11-2	54	1	51	3	50	5	49	6	48	7	47	7	47	8	46	8	50	5
C-11-1	45	0.17	44	1	44	1	44	1	43	2	43	2	43	2	43	2	45	0
Barrier Length (Feet)			2495		2495		2495		2495		2495		2495		2495		751	
Area (square feet), from TNM			34927		39917		44906		49896		54885		59875		64864		13045	
Total # Receptor units receiving at least 5 dBA insertion loss			0		1		1		1		1		1		1		1	
Area/ # of 5dBA Benefited Receptors			N/A		39917		44906		49896		54885		59875		64864		13045	
Exterior Noise levels reduced by at least 7 DBA for 1 benefitted Receptor?			NO		NO		NO		YES		YES		YES		YES		NO	

Notes:
1. A Receptor Number beginning with "M" represents a field measured location and a Receptor Number beginning with "R", "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria: Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.
5. Orange highlighted cells indicate insertion losses of 5 or greater for the Optimized Barrier.

6.10 NSA 12 Barrier Design

NSA 12 contains 12 ERUs. The NSA 12 Barrier was laid out to protect impacted receiver R-12-2 at the Utz Soccer Fields, as shown on **Map 21**. The preliminary sound barrier alignment is set along the edge of preliminary drainage swale slope along the Alternative 5C Eisenhower Drive Extension through undeveloped land. A preliminary barrier is set approximately 100' east of the proposed roadway centerline.

Table 13 shows the 2042 Build Predicted Noise Levels, with and without a barrier, the insertion losses attained and the barrier design data for various constant height barriers that were analyzed. A maximum of 2 dB(A) noise level reduction (Insertion Loss) can be achieved at the impacted receiver. Even the 28' constant height barrier does not receive 5 dB(A) or greater reduction (0%); therefore, not meeting the feasibility criteria in this area. **The NSA 12 Preliminary Barrier is not feasible and not optimized for reasonableness.**

Appendix I contains the draft version of the Warranted, Feasible, and Reasonable Worksheet for NSA 12.

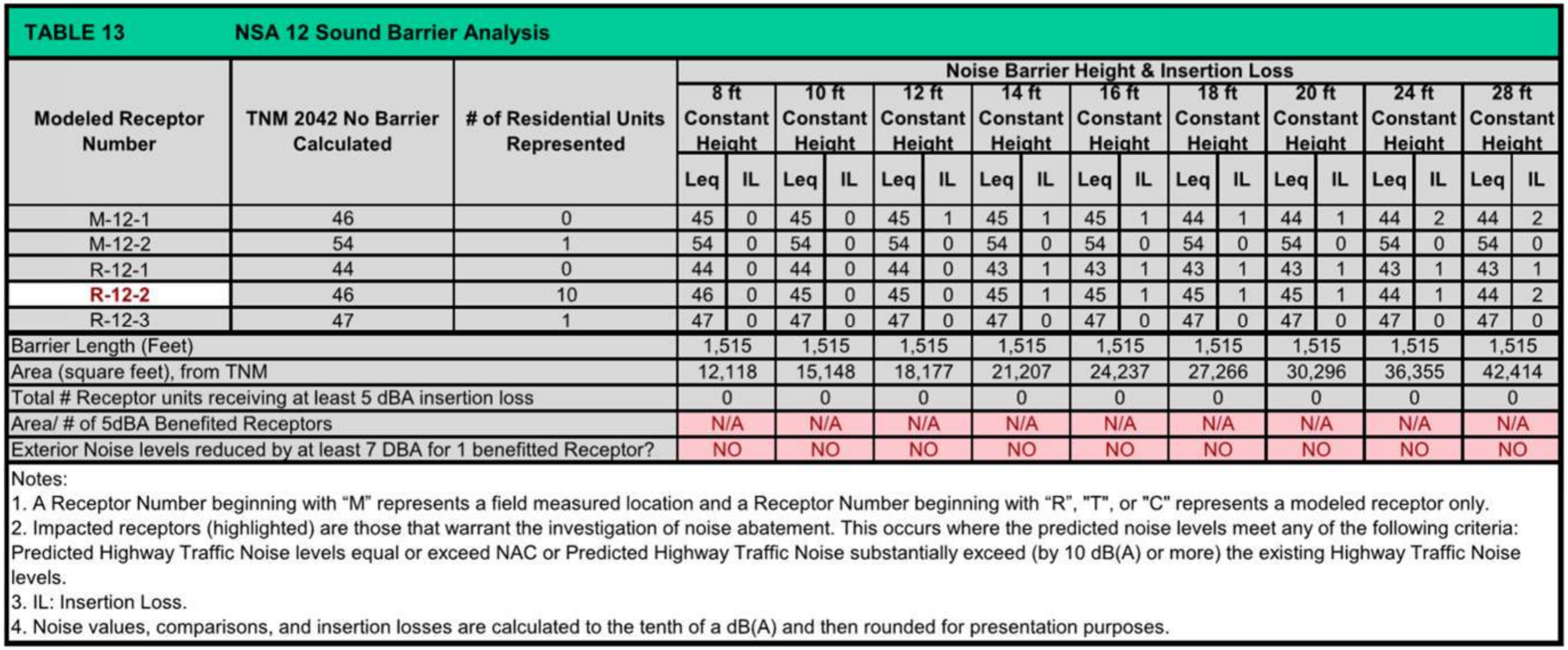


TABLE 13 **NSA 12 Sound Barrier Analysis**

Modeled Receptor Number	TNM 2042 No Barrier Calculated	# of Residential Units Represented	Noise Barrier Height & Insertion Loss																	
			8 ft Constant Height		10 ft Constant Height		12 ft Constant Height		14 ft Constant Height		16 ft Constant Height		18 ft Constant Height		20 ft Constant Height		24 ft Constant Height		28 ft Constant Height	
			Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL	Leq	IL
M-12-1	46	0	45	0	45	0	45	1	45	1	45	1	44	1	44	1	44	2	44	2
M-12-2	54	1	54	0	54	0	54	0	54	0	54	0	54	0	54	0	54	0	54	0
R-12-1	44	0	44	0	44	0	44	0	43	1	43	1	43	1	43	1	43	1	43	1
R-12-2	46	10	46	0	45	0	45	0	45	1	45	1	45	1	45	1	44	1	44	2
R-12-3	47	1	47	0	47	0	47	0	47	0	47	0	47	0	47	0	47	0	47	0
Barrier Length (Feet)			1,515		1,515		1,515		1,515		1,515		1,515		1,515		1,515		1,515	
Area (square feet), from TNM			12,118		15,148		18,177		21,207		24,237		27,266		30,296		36,355		42,414	
Total # Receptor units receiving at least 5 dBA insertion loss			0		0		0		0		0		0		0		0		0	
Area/ # of 5dBA Benefited Receptors			N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
Exterior Noise levels reduced by at least 7 DBA for 1 benefitted Receptor?			NO		NO		NO		NO		NO		NO		NO		NO		NO	

Notes:

1. A Receptor Number beginning with “M” represents a field measured location and a Receptor Number beginning with “R”, "T", or "C" represents a modeled receptor only.
2. Impacted receptors (highlighted) are those that warrant the investigation of noise abatement. This occurs where the predicted noise levels meet any of the following criteria: Predicted Highway Traffic Noise levels equal or exceed NAC or Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise levels.
3. IL: Insertion Loss.
4. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.

7.0 CONSTRUCTION NOISE

During construction for the Eisenhower Drive Extension Project, the residences closest to the construction area will likely be impacted by construction noise as a result of the project. To minimize the impact to the residential community, all proposed construction will comply with applicable Federal, State and Local noise control regulations, as well as the Occupational Safety and Health Act of 1970. Where practicable, construction activity should be confined to time periods that will create a minimum amount of disturbance to the community.

The contractor should use only equipment adapted to operate with the least possible noise and should conduct their work so that annoyance to occupants of nearby property and the general public will be reduced to a minimum.

8.0 PUBLIC INVOLVEMENT

Every effort to involve the local officials and affected communities is being made throughout the design process. PennDOT Publications No. 295 Public Involvement Handbook and PUB 24 Project Level Highway Traffic Noise Handbook are being used as guides for the public involvement process. A project website has been established to promote the entire project to the public. The project's name is the Eisenhower Drive Extension Project and the website is http://eisenhowerdriveextension.com/. The website is being updated throughout the design and construction phases of the project.

A Public Plans Display Open House was conducted on June 21, 2018, from 6:00 to 8:00 pm and a second Open House was held on May 9, 2019 from 2pm to 7pm, at the Southeast Adams Volunteer Emergency Services facility located at 5865 Hanover Road, Hanover, PA 17331. The purpose of these meetings was to: introduce the project to the public, provide information on the status of the project, display the preliminary proposed alignments, provide the opportunity to view the display boards presenting various elements of the project, provide the public an opportunity to provide feedback on the project, and meet with the project design team.

In addition to the Public Plans Display Open House held on June 21, 2018 and May 9, 2019, the following public involvement activities are anticipated:

- Redevelopment of the project website: http://eisenhowerdriveextension.com/
- The Draft EA will be made available to the public for review, and
- Around the same time as the public review period, there will be an opportunity for a Public Hearing.

In addition, the design team continues to coordinate with specific property owners along the preferred alignment corridors, addressing concerns and answering questions about the noise analysis as needed.

The Pennsylvania Department of Transportation is committed to the construction of warranted, feasible, and reasonable Highway Traffic Noise Abatement measures at noise impacted locations, contingent upon the following conditions: detailed noise analyses conducted during the Final Design process; analysis and determination of the Feasibility and Reasonableness of Highway Traffic Noise Abatement measures, methodology and criteria; community input regarding desires, types, heights, locations, and aesthetic considerations; preferences regarding compatibility with adjacent land uses; and safety and engineering aspects as related to the roadway user and the adjacent property owner.

The exact location, abatement type, aesthetic treatment, and right-of-way requirements will be determined for the Final Noise Report as part of the Final Design Phase of the project after a preferred alternative is chosen. The Final Design Phase will also include the opportunity for directly impacted communities to provide input and vote. Ballots will include voting in favor or against sound barriers being constructed and color and texture desires for the community side of the barrier.

Documents associated with public involvement coordination are included in **Appendix J**.

9.0 REFERENCES

A. Title 23, United States Code of Federal Regulations, Part 772, (23 CFR) entitled Procedures for Abatement of Highway Traffic Noise and Construction Noise. National Archives and Records Administration – April 1, 1995

B. Highway Traffic Noise Analysis and Abatement, Policy and Guidance. USDOT, FHWA – June, 1995.

C. Pennsylvania Department of Transportation Project Level Highway Traffic Noise Handbook. *Appendix E - Methodologies for Determining Equivalent Residential Unit Values and Assessing Noise Barrier Reasonableness in Activity Category B, C, D, and E Areas*. Revised Publication No. 24 – November 2015.

D. Project Website: http://eisenhowerdriveextension.com/

E. U.S. Department of Transportation Federal Highway Administration, Traffic Noise Model Technical Manual, FHWA-PD-96-010. February 1998.

F. FHWA TNM Frequently Asked Questions: http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_faqs/faq00.cfm

10.0 MAPS

a. Maps 1 through 5– Measured Noise Level Maps

b. Maps 6 through 10 – 2015 Existing Worst-Case Maps

c. Maps 11 through 15 –2042 Build Maps

d. Map 16 – NSA 3 Barrier Build Map

e. Map 17 – NSA 5 Barrier Build Map

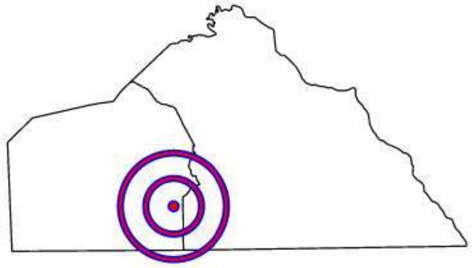
f. Map 18 – NSA 8 Barrier Build Map

g. Map 19 – NSA 9 Barrier Build Map

h. Map 20 – NSA 10 & NSA 11 Barrier Build Map

i. Map 21 – NSA 12 Barrier Build Map

Adams and York Counties



Vicinity Map

0 800 1600
Scale in Feet

Legend

Map 1	Map Area	NSA-1	Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

MAP INDEX

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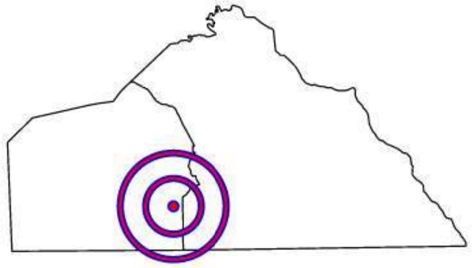
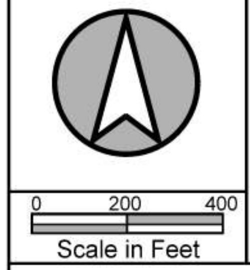
9/11/2019

Adams and York Counties



Vicinity Map



Legend

Ⓐ M-1-1 Short Term Noise Measurement Site

(63) Measured Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019
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September 2019

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MEASURED NOISE LEVEL MAP

Map No. 1

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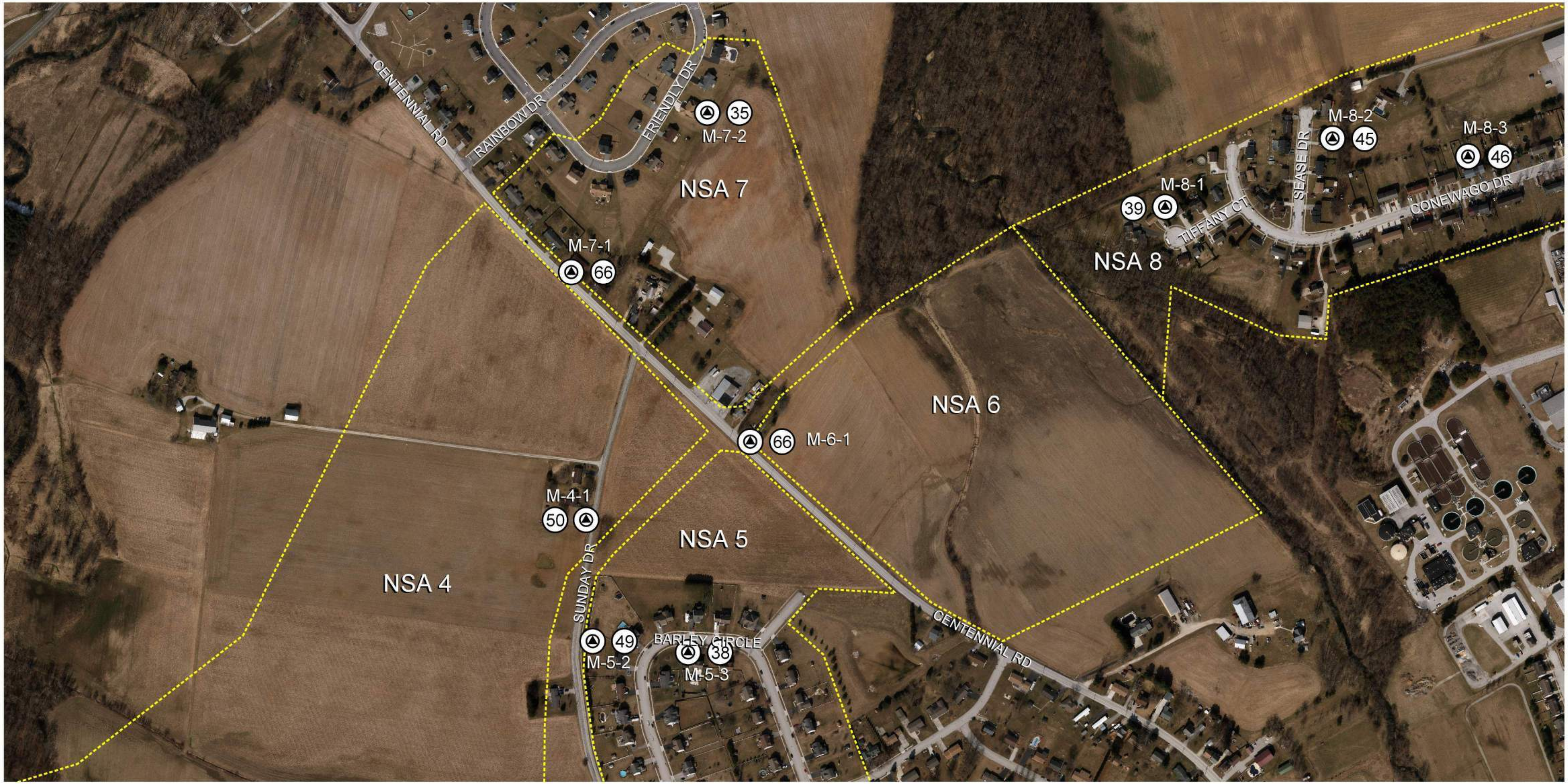
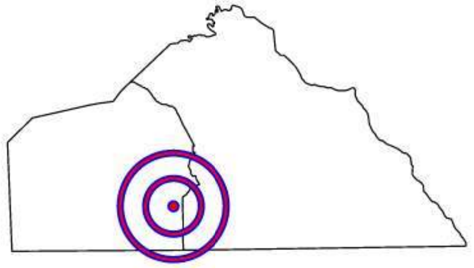
9/11/2019



Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

◉ M-1-1	Short Term Noise Measurement Site	63	Measured Noise Level, Leq, dB(A)
NSA-1	Noise Study Area		

May 2019
REVISED
September 2019

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District 8-0

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Noise Report

MEASURED NOISE LEVEL MAP

Map No. 2

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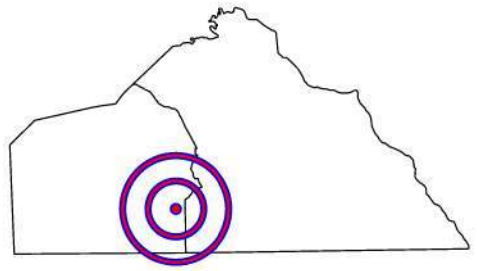
9/11/2019

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

Ⓐ Short Term Noise Measurement Site
M-1-1

(63) Measured Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019
REVISED
September 2019

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MEASURED NOISE LEVEL MAP

Map No. 3

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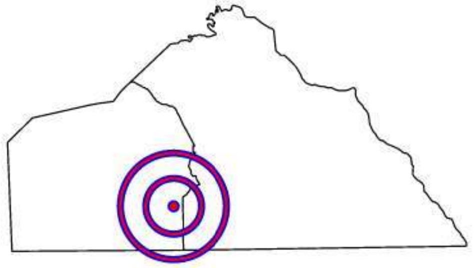
9/11/2019

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1	Short Term Noise Measurement Site	63	Measured Noise Level, Leq, dB(A)
NSA-1	Noise Study Area		

May 2019
REVISED
September 2019

PennDOT
District 8-0

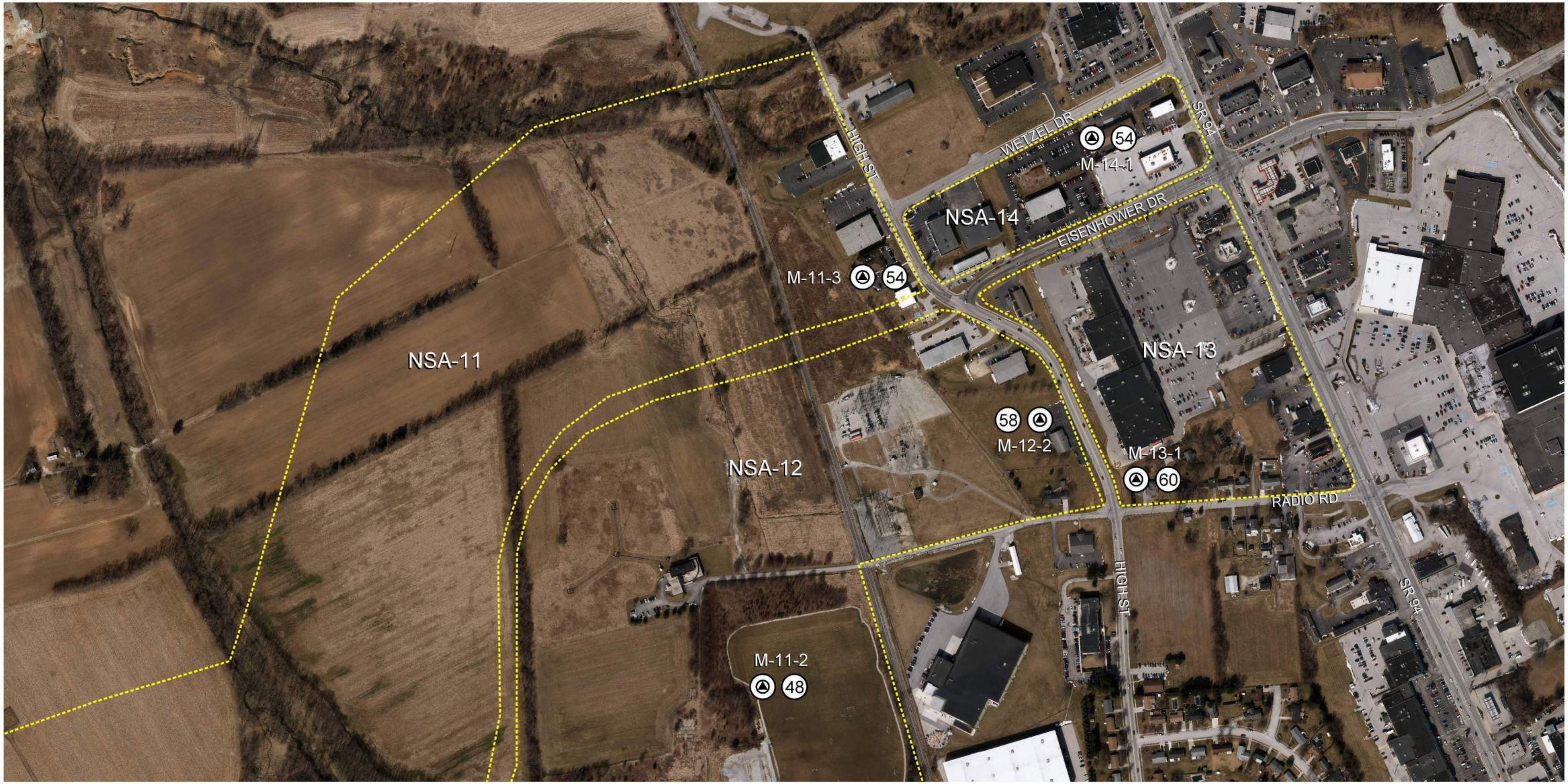
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

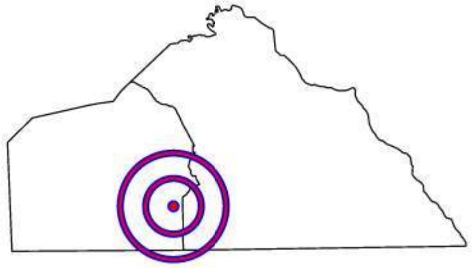
MEASURED NOISE LEVEL MAP

Map No. 4

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\4- Prelim Noise Report- Measured.dgn
9/11/2019



Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

Short Term Noise Measurement Site M-1-1

63 Measured Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

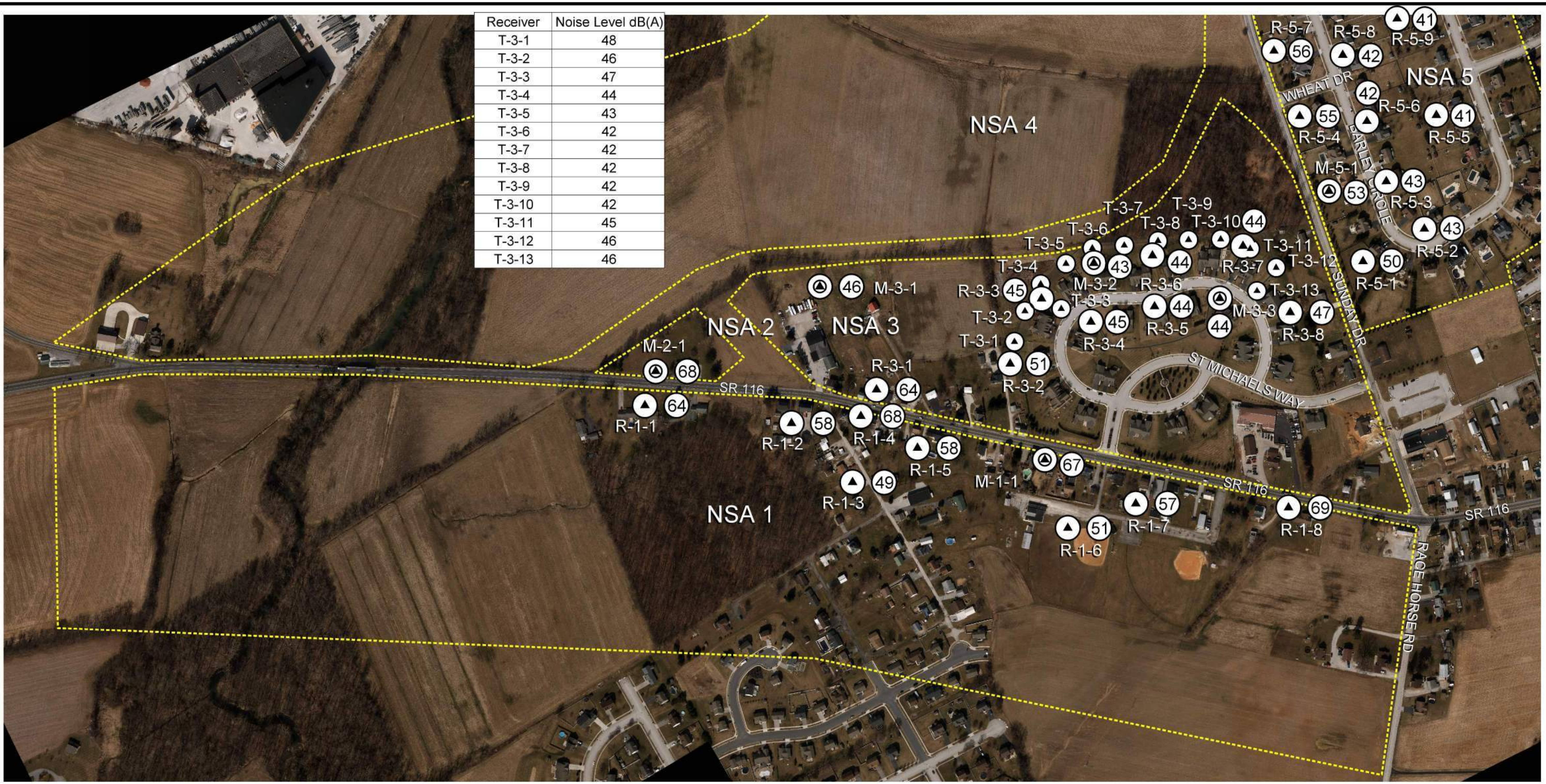
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

MEASURED NOISE LEVEL MAP

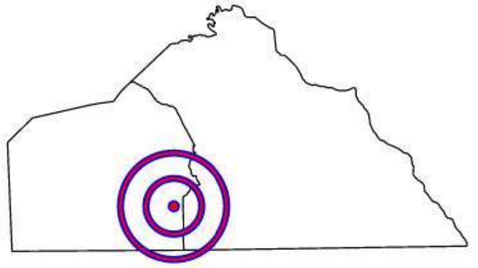
Map No. 5

\\fileserver\SCI-NET01\Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\5- Prelim Noise Report- Measured.dgn
9/11/2019



Receiver	Noise Level dB(A)
T-3-1	48
T-3-2	46
T-3-3	47
T-3-4	44
T-3-5	43
T-3-6	42
T-3-7	42
T-3-8	42
T-3-9	42
T-3-10	42
T-3-11	45
T-3-12	46
T-3-13	46

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1 ◉ Short Term Noise Measurement Site

R-1-1 ▲ Modeled Receptor

T-3-1 ▲ Modeled Trail Receptor

(63) 2015 Existing Worst-Case Level, Leq, dB(A)

C-9-1 ▲ Modeled Cemetery Receptor

NSA-1 Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

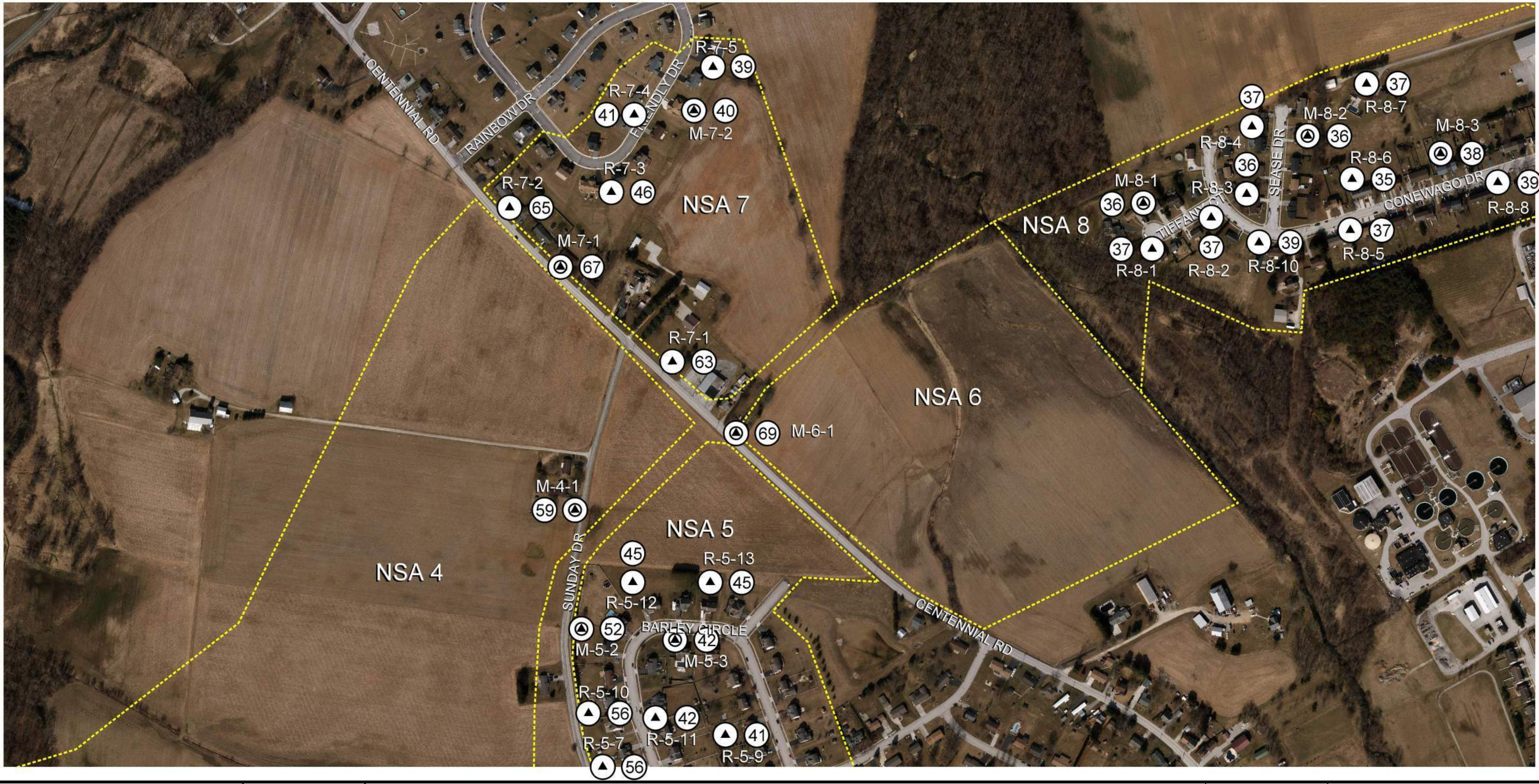
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

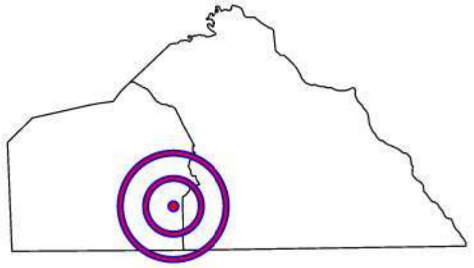
2015 EXISTING WORST-CASE MAP

Map No. 6

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\6- Prelim Noise Report- Existing.dgn
9/11/2019



Adams and York Counties



Vicinity Map

Legend

M-1-1 ◉ Short Term Noise Measurement Site

R-1-1 ▲ Modeled Receptor

T-3-1 ▲ Modeled Trail Receptor

63 2015 Existing Worst-Case Level, Leq, dB(A)

C-9-1 ▲ Modeled Cemetery Receptor

NSA-1 Noise Study Area

0 200 400
Scale in Feet

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

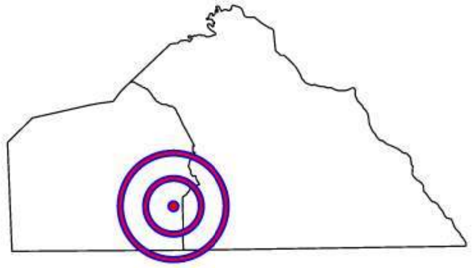
2015 EXISTING WORST-CASE MAP

Map No. 7

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\7- Prelim Noise Report- Existing.dgn
9/11/2019

Receiver	Noise Level dB(A)
C-9-1	38
C-9-2	39
C-9-3	41
C-9-4	42
C-9-5	38
C-9-6	39
C-9-7	40
C-9-8	41
C-9-9	38
C-9-10	39
C-9-11	39
C-9-12	40
C-9-13	38
C-9-14	39
C-9-15	39
C-9-16	40
C-9-17	37
C-9-18	38
C-9-19	39
C-9-20	37

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1	◉	Short Term Noise Measurement Site	R-1-1	▲	Modeled Receptor
T-3-1	▲	Modeled Trail Receptor		(63)	2015 Existing Worst-Case Level, Leq, dB(A)
C-9-1	▲	Modeled Cemetery Receptor	NSA-1		Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

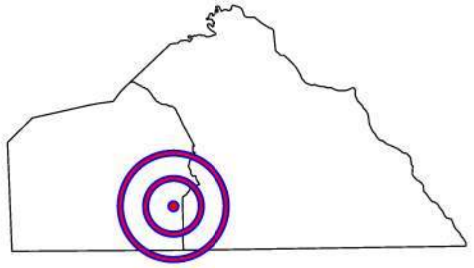
Preliminary
Technical
Noise Report

2015 EXISTING WORST-CASE MAP

Map No. 8

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\8- Prelim Noise Report- Existing.dgn
9/11/2019

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1 ◎ Short Term Noise Measurement Site
R-1-1 ▲ Modeled Receptor
T-3-1 △ Modeled Trail Receptor
(63) 2015 Existing Worst-Case Level, Leq, dB(A)
C-9-1 △ Modeled Cemetery Receptor
NSA-1 Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

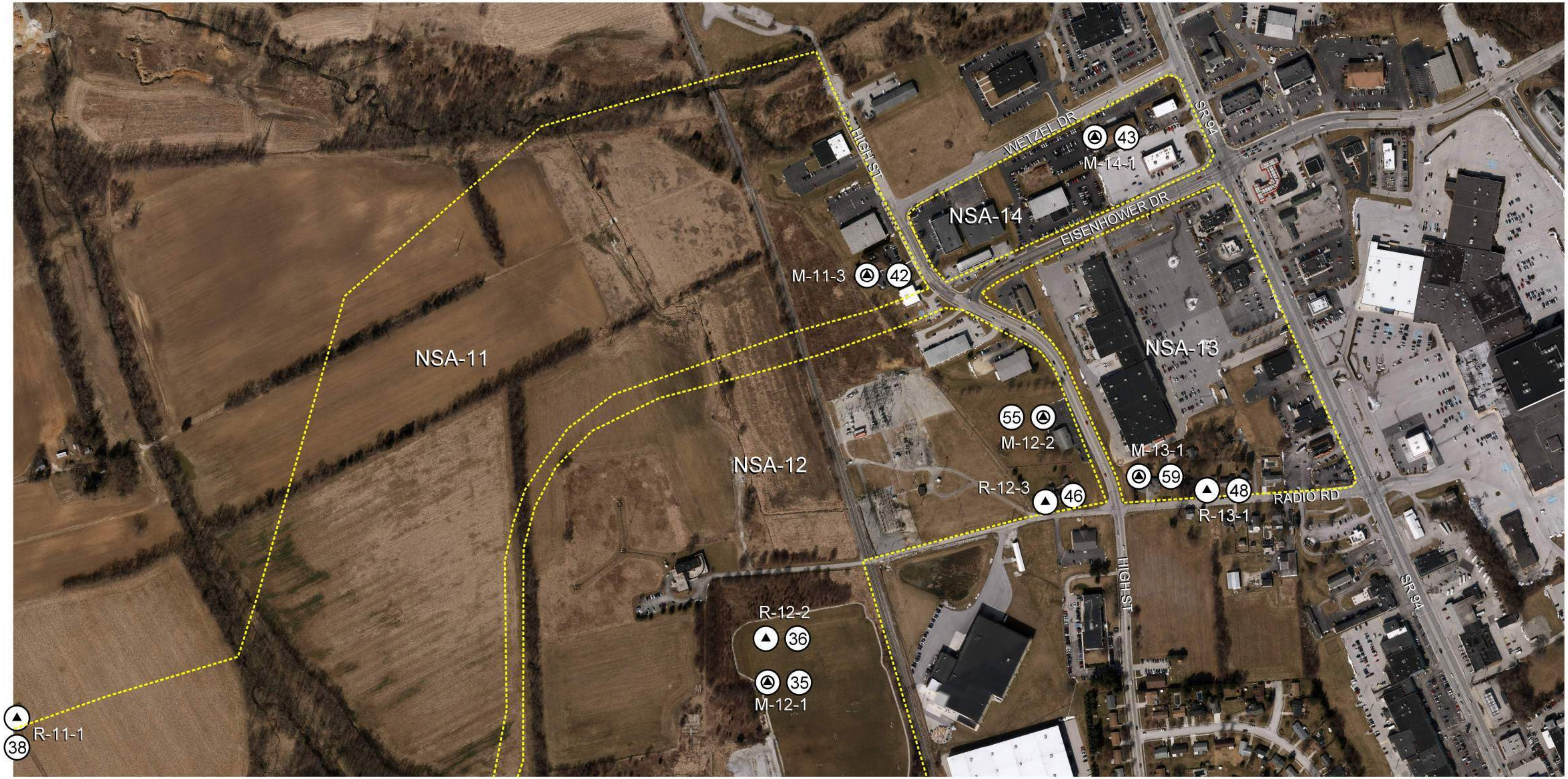
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

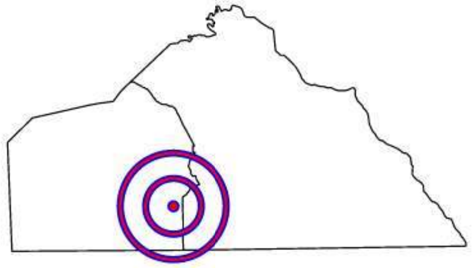
2015 EXISTING WORST-CASE MAP

Map No. 9

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\9- Prelim Noise Report- Existing.dgn
9/11/2019



Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1	Short Term Noise Measurement Site	R-1-1	Modeled Receptor
T-3-1	Modeled Trail Receptor	63	2015 Existing Worst-Case Level, Leq, dB(A)
C-9-1	Modeled Cemetery Receptor	NSA-1	Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

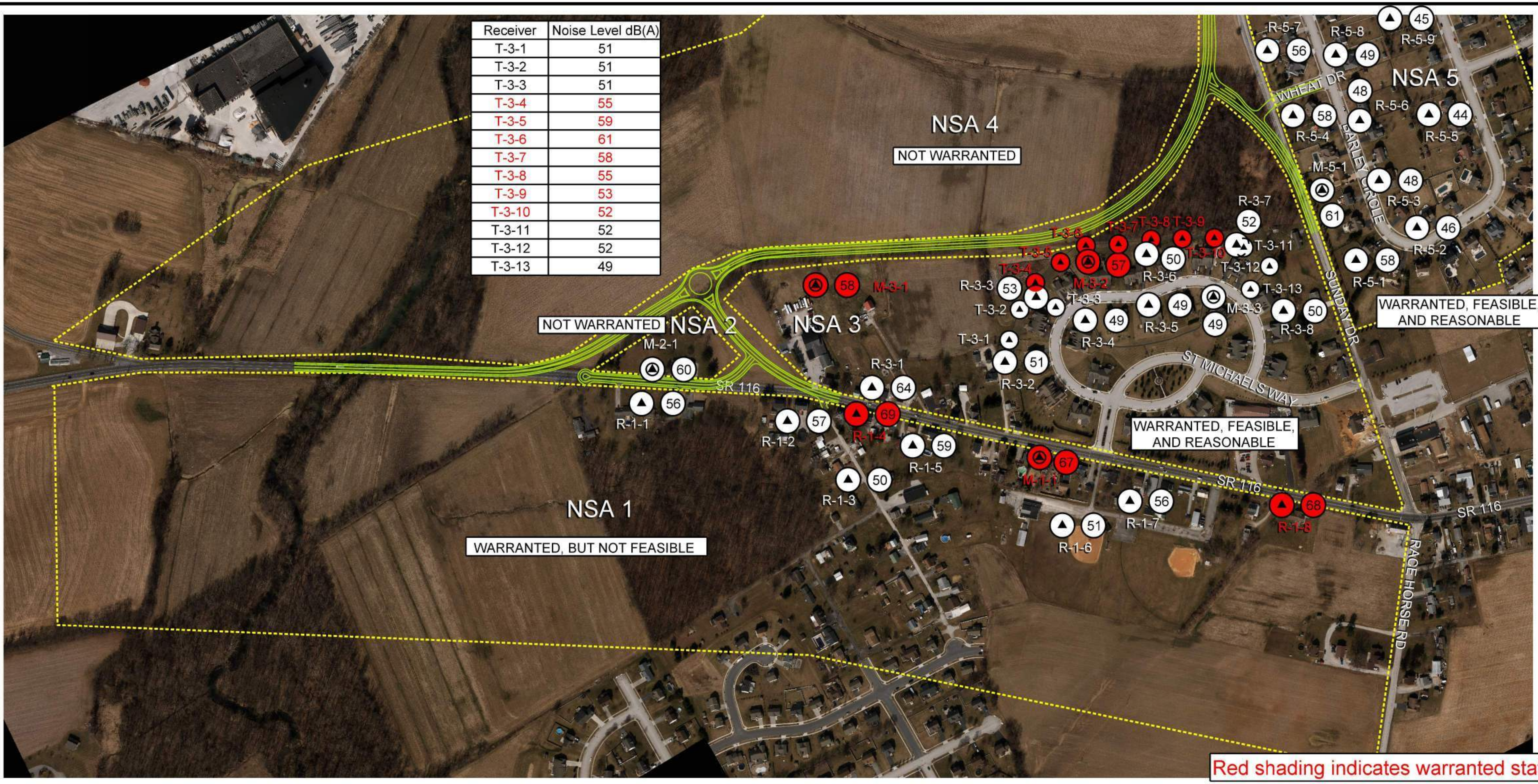
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

2015 EXISTING WORST-CASE MAP

Map No. 10

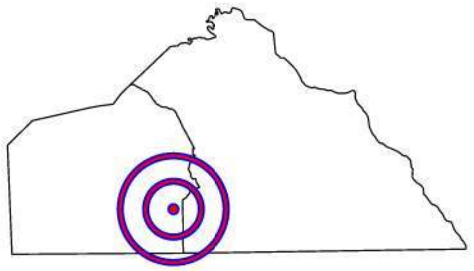
\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\10- Prelim Noise Report- Existing.dgn
9/11/2019



Receiver	Noise Level dB(A)
T-3-1	51
T-3-2	51
T-3-3	51
T-3-4	55
T-3-5	59
T-3-6	61
T-3-7	58
T-3-8	55
T-3-9	53
T-3-10	52
T-3-11	52
T-3-12	52
T-3-13	49

Red shading indicates warranted status

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1 ◎ Short Term Noise Measurement Site
T-3-1 ▲ Modeled Trail Receptor
C-9-1 ▲ Modeled Cemetery Receptor
R-1-1 ▲ Modeled Receptor
63 2042 Build Noise Level, Leq, dB(A)
NSA-1 Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

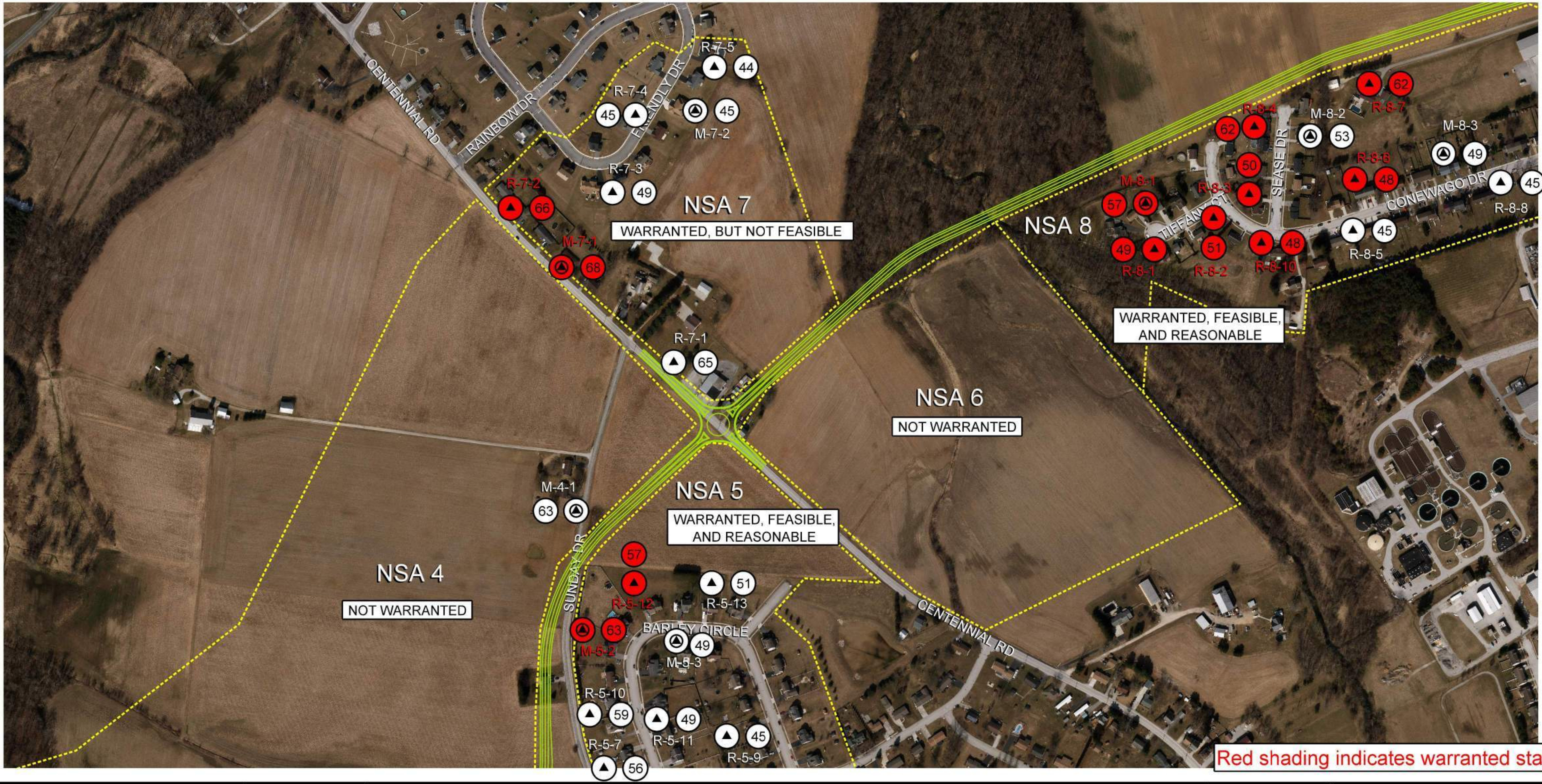
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

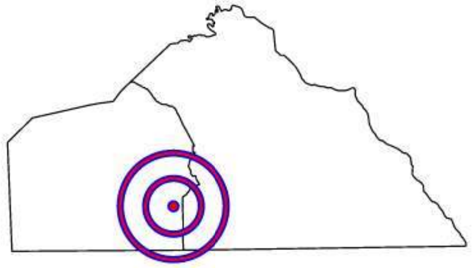
2042 BUILD MAP

Map No. 11

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\11- Prelim Noise Report- Proposed.dgn
9/11/2019



Adams and York Counties



Vicinity Map

Legend

M-1-1 ◬ Short Term Noise Measurement Site

R-1-1 ▲ Modeled Receptor

T-3-1 ▲ Modeled Trail Receptor

63 2042 Build Noise Level, Leq, dB(A)

C-9-1 ▲ Modeled Cemetery Receptor

NSA-1 Noise Study Area

0 200 400
Scale in Feet

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

2042 BUILD MAP

Map No. 12

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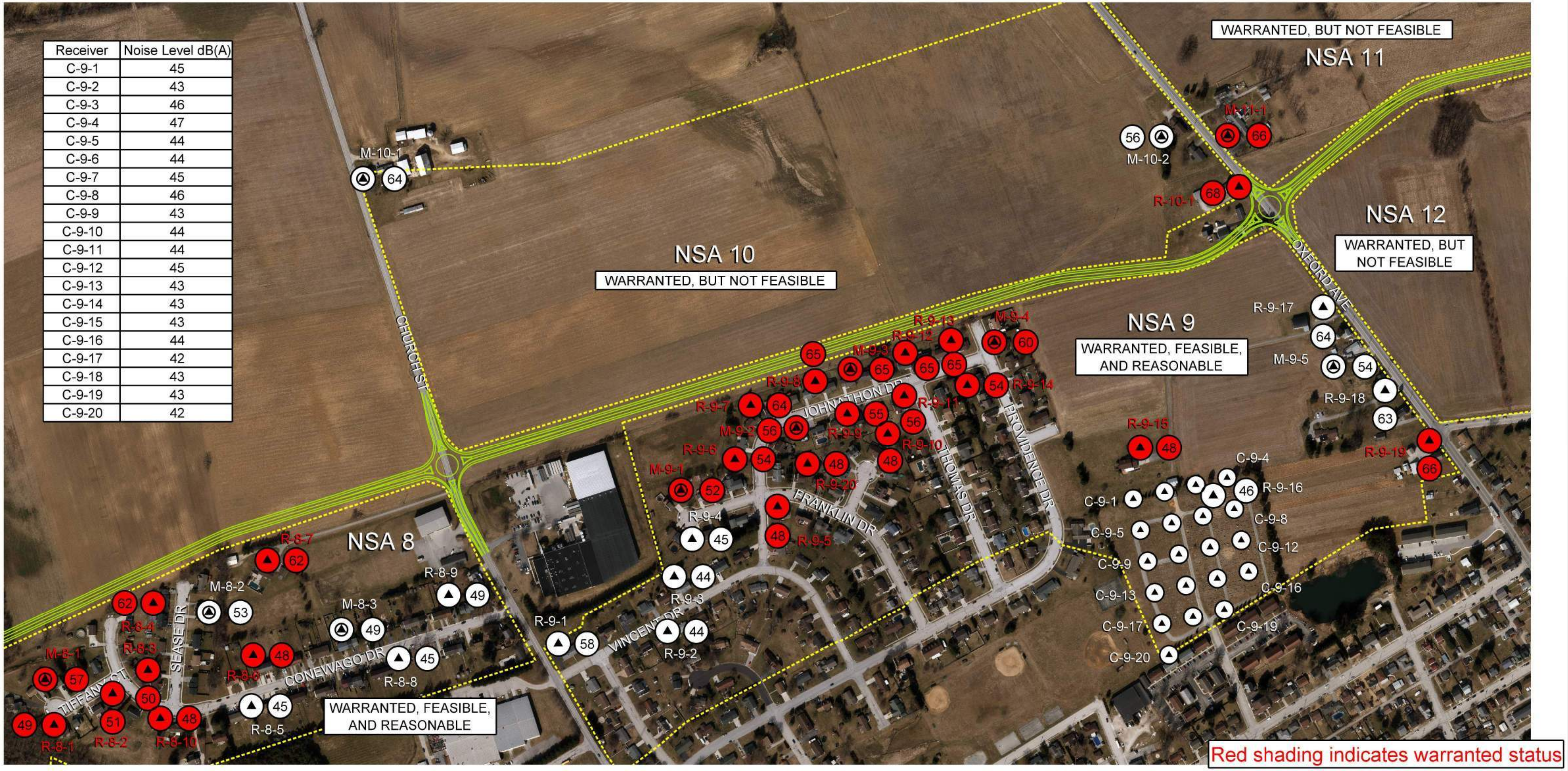
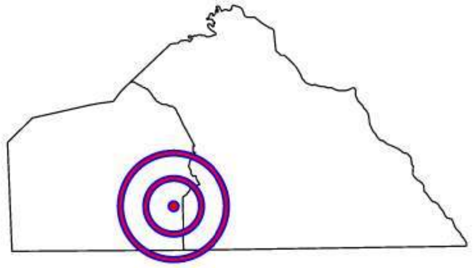
9/11/2019



Receiver	Noise Level dB(A)
C-9-1	45
C-9-2	43
C-9-3	46
C-9-4	47
C-9-5	44
C-9-6	44
C-9-7	45
C-9-8	46
C-9-9	43
C-9-10	44
C-9-11	44
C-9-12	45
C-9-13	43
C-9-14	43
C-9-15	43
C-9-16	44
C-9-17	42
C-9-18	43
C-9-19	43
C-9-20	42

Red shading indicates warranted status

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1	◎	Short Term Noise Measurement Site
R-1-1	▲	Modeled Receptor
T-3-1	▲	Modeled Trail Receptor
	63	2042 Build Noise Level, Leq, dB(A)
C-9-1	▲	Modeled Cemetery Receptor
NSA-1		Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

2042 BUILD MAP

Map No. 13

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\13- Prelim Noise Report- Proposed.dgn
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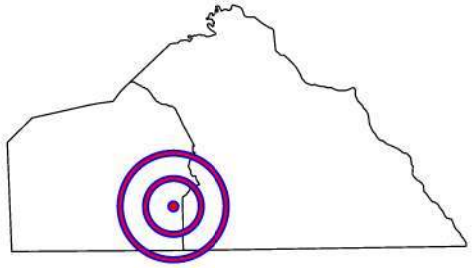
Red shading indicates warranted status

Adams and York Counties



Vicinity Map

0 200 400
Scale in Feet

Legend

M-1-1 ◎ Short Term Noise Measurement Site

R-1-1 ▲ Modeled Receptor

T-3-1 ▲ Modeled Trail Receptor

63 2042 Build Noise Level, Leq, dB(A)

C-9-1 ▲ Modeled Cemetery Receptor

NSA-1 Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

2042 BUILD MAP

Map No. 14

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\14- Prelim Noise Report- Proposed.dgn
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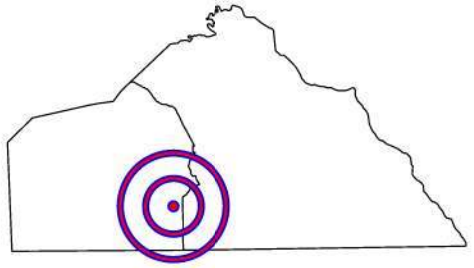
Red shading indicates warranted status

Adams and York Counties



Vicinity Map

Scale in Feet: 0 200 400

Legend

M-1-1 Short Term Noise Measurement Site
R-1-1 Modeled Receptor
T-3-1 Modeled Trail Receptor
(63) 2042 Build Noise Level, Leq, dB(A)
C-9-1 Modeled Cemetery Receptor
NSA-1 Noise Study Area

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

2042 BUILD MAP

Map No. 15

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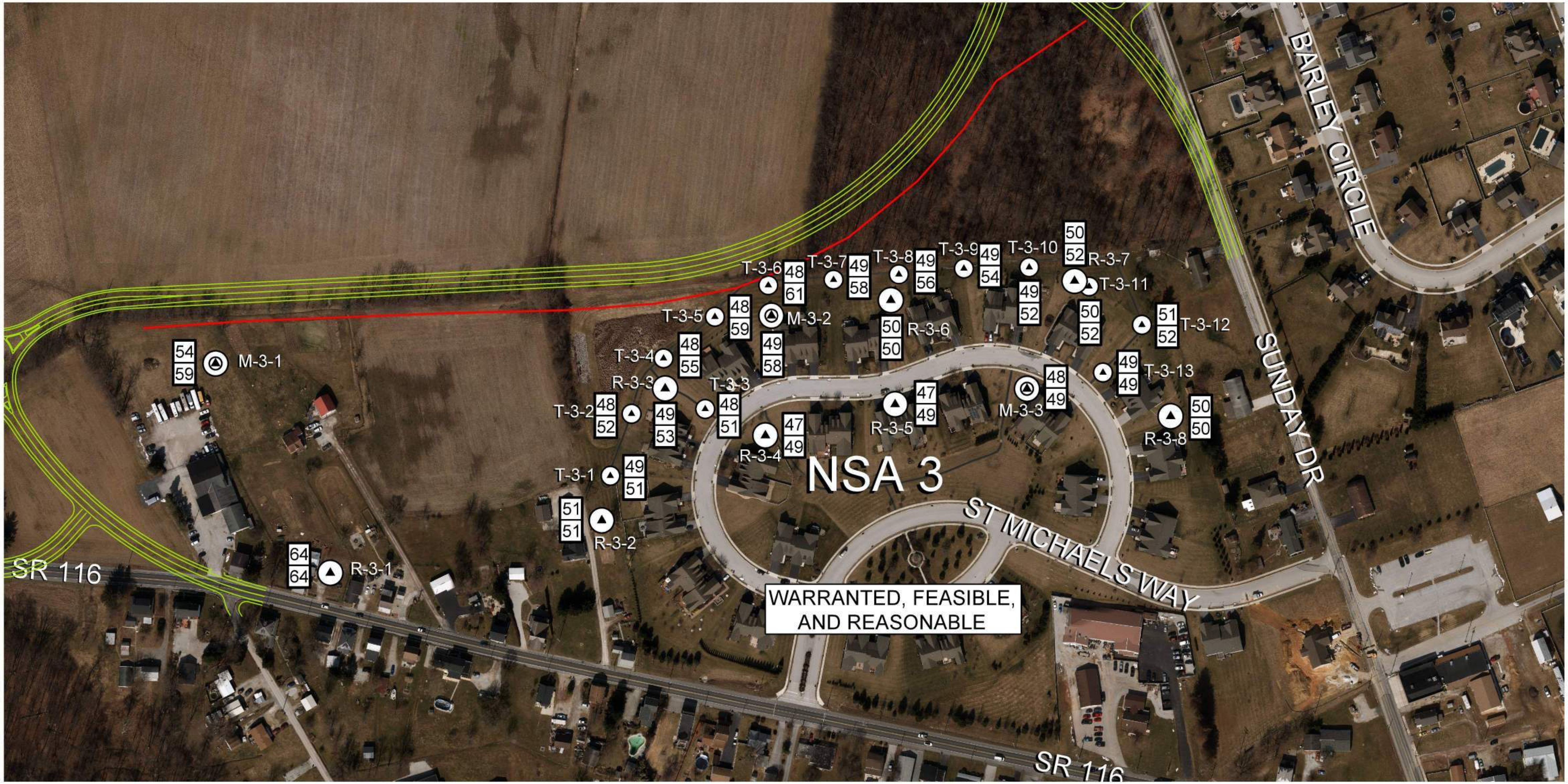
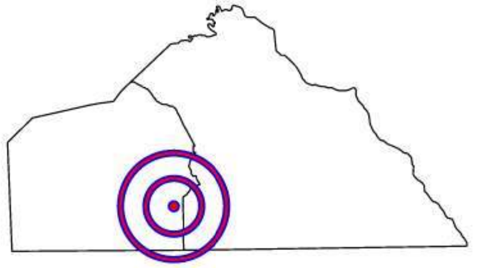
9/11/2019



Adams and York Counties



Vicinity Map

0 100 200
Scale in Feet

Legend

M-1-1 ◉ Short Term Noise Measurement Site

T-3-1 ▲ Modeled Trail Receptor

C-9-1 ▲ Modeled Cemetery Receptor

R-1-1 ▲ Modeled Receptor

65 2042 Barrier Noise Level, Leq, dB(A)
72 2042 No Barrier Noise Level, Leq, dB(A)

— Optimized Noise Barrier

May 2019
REVISED
September 2019

PennDOT
District 8-0

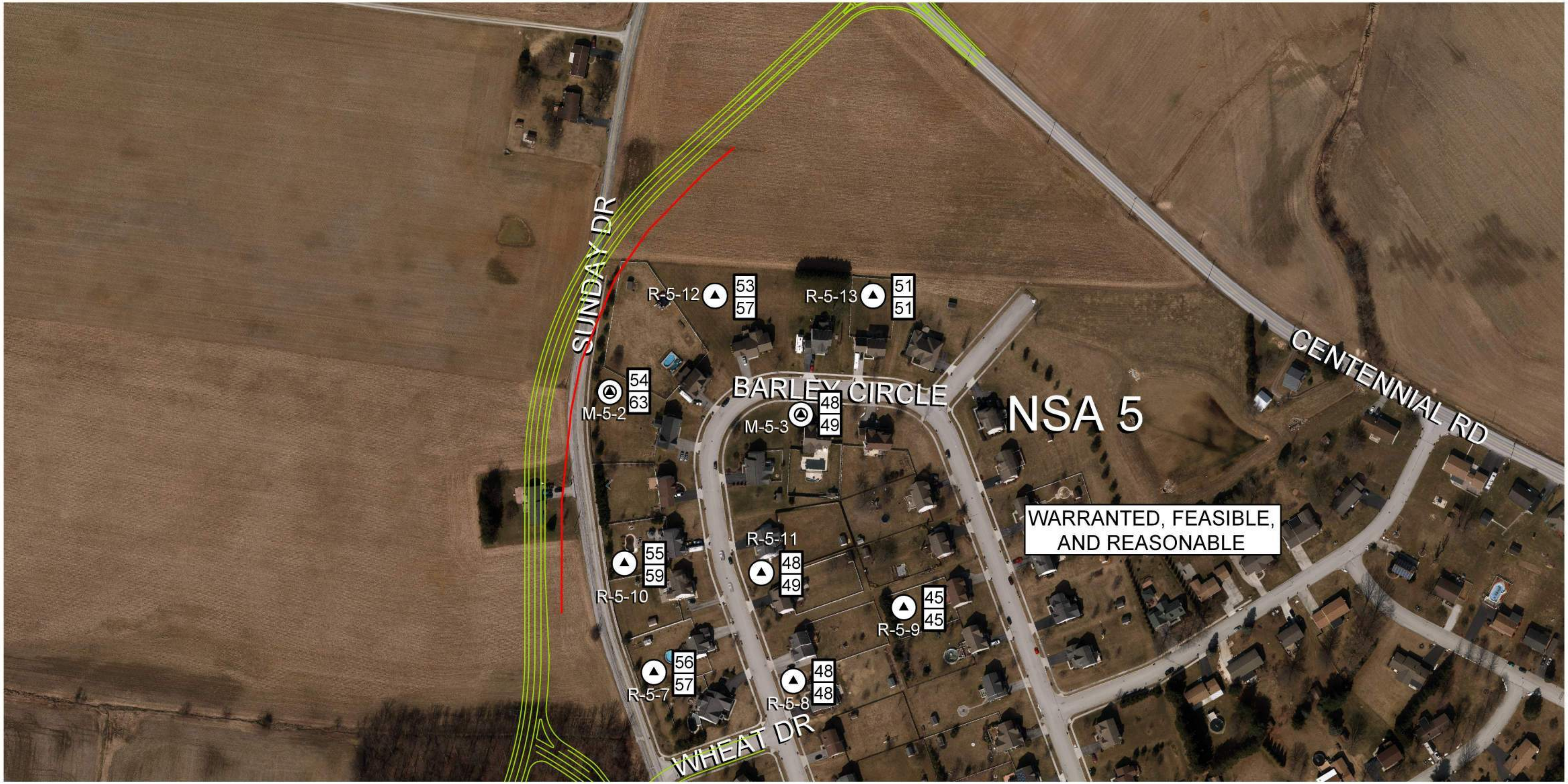
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

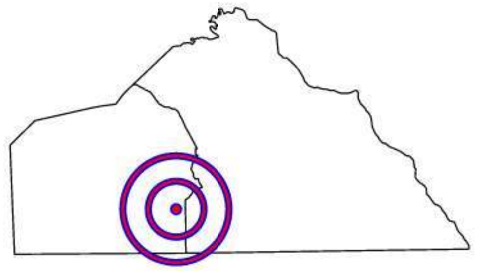
NSA 3 BARRIER BUILD MAP

Map No. 16

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\16- Prelim Noise Report- NSA 3 Barrier.dgn
9/11/2019



Adams and York Counties



Vicinity Map

Legend

M-1-1	Short Term Noise Measurement Site	R-1-1	Modeled Receptor
T-3-1	Modeled Trail Receptor	65	2042 Barrier Noise Level, Leq, dB(A)
		72	2042 No Barrier Noise Level, Leq, dB(A)
C-9-1	Modeled Cemetery Receptor		Optimized Noise Barrier

May 2019
REVISED
September 2019

PennDOT
District 8-0

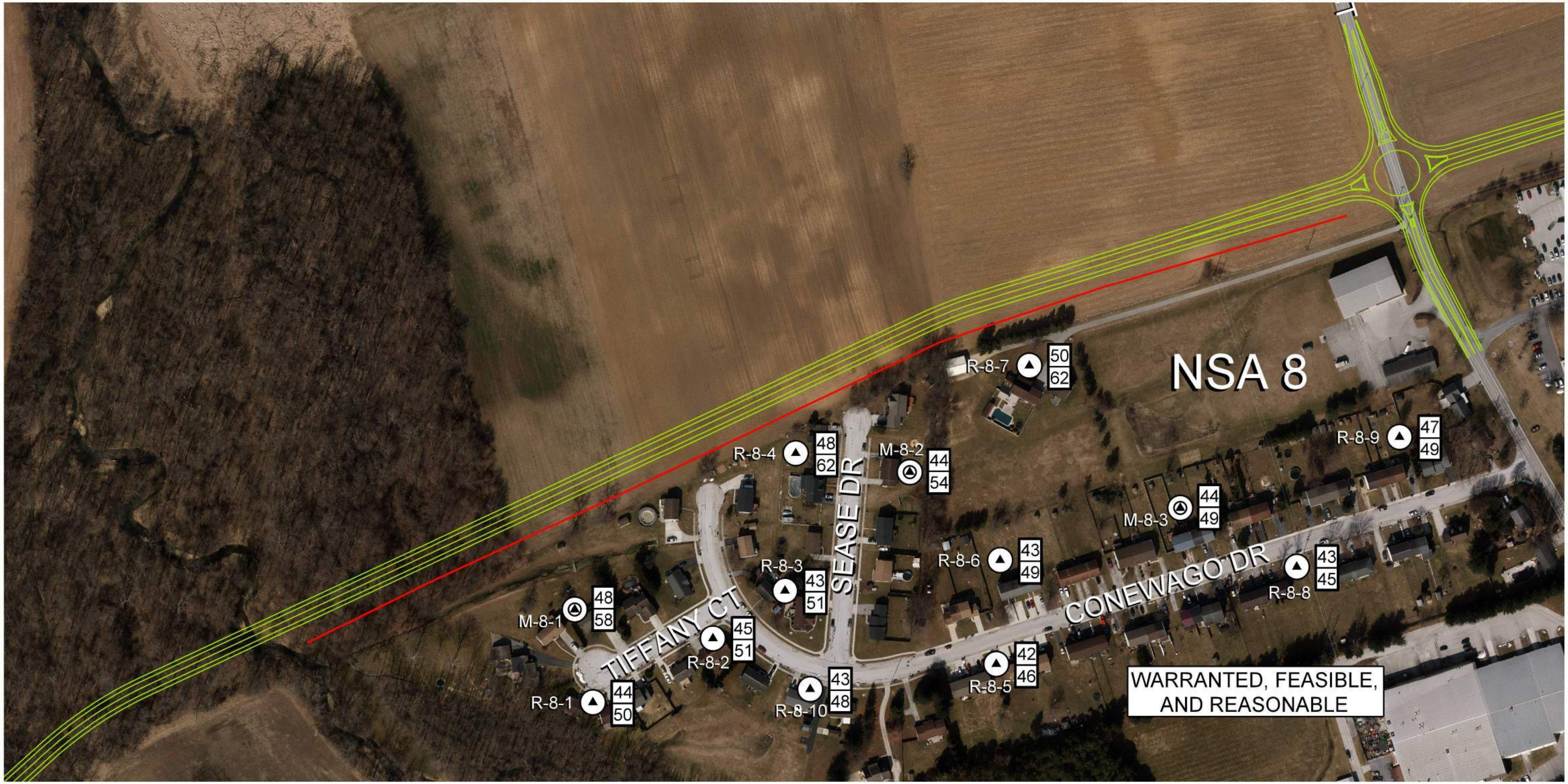
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

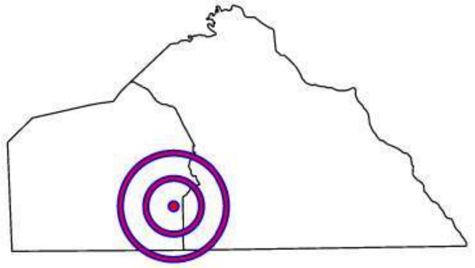
NSA 5 BARRIER BUILD MAP

Map No. 17

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\17- Prelim Noise Report- NSA 5 Barrier.dgn
9/11/2019



Adams and York Counties



Vicinity Map

0 100 200
Scale in Feet

Legend

M-1-1	◎	Short Term Noise Measurement Site
T-3-1	▲	Modeled Trail Receptor
C-9-1	▲	Modeled Cemetery Receptor
R-1-1	▲	Modeled Receptor
	65	2042 Barrier Noise Level, Leq, dB(A)
	72	2042 No Barrier Noise Level, Leq, dB(A)
	—	Optimized Noise Barrier

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

NSA 8 BARRIER BUILD MAP

Map No. 18

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\18- Prelim Noise Report- NSA 8 Barrier.dgn
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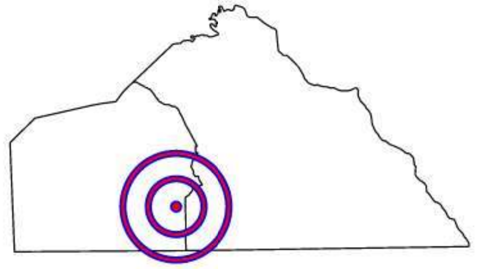
Adams and York Counties



Vicinity Map

0 100 200
Scale in Feet

Legend

M-1-1 Short Term Noise Measurement Site

T-3-1 Modeled Trail Receptor

C-9-1 Modeled Cemetery Receptor

R-1-1 Modeled Receptor

65 2042 Barrier Noise Level, Leq, dB(A)

72 2042 No Barrier Noise Level, Leq, dB(A)

Optimized Noise Barrier

May 2019
REVISED
September 2019

PennDOT
District 8-0

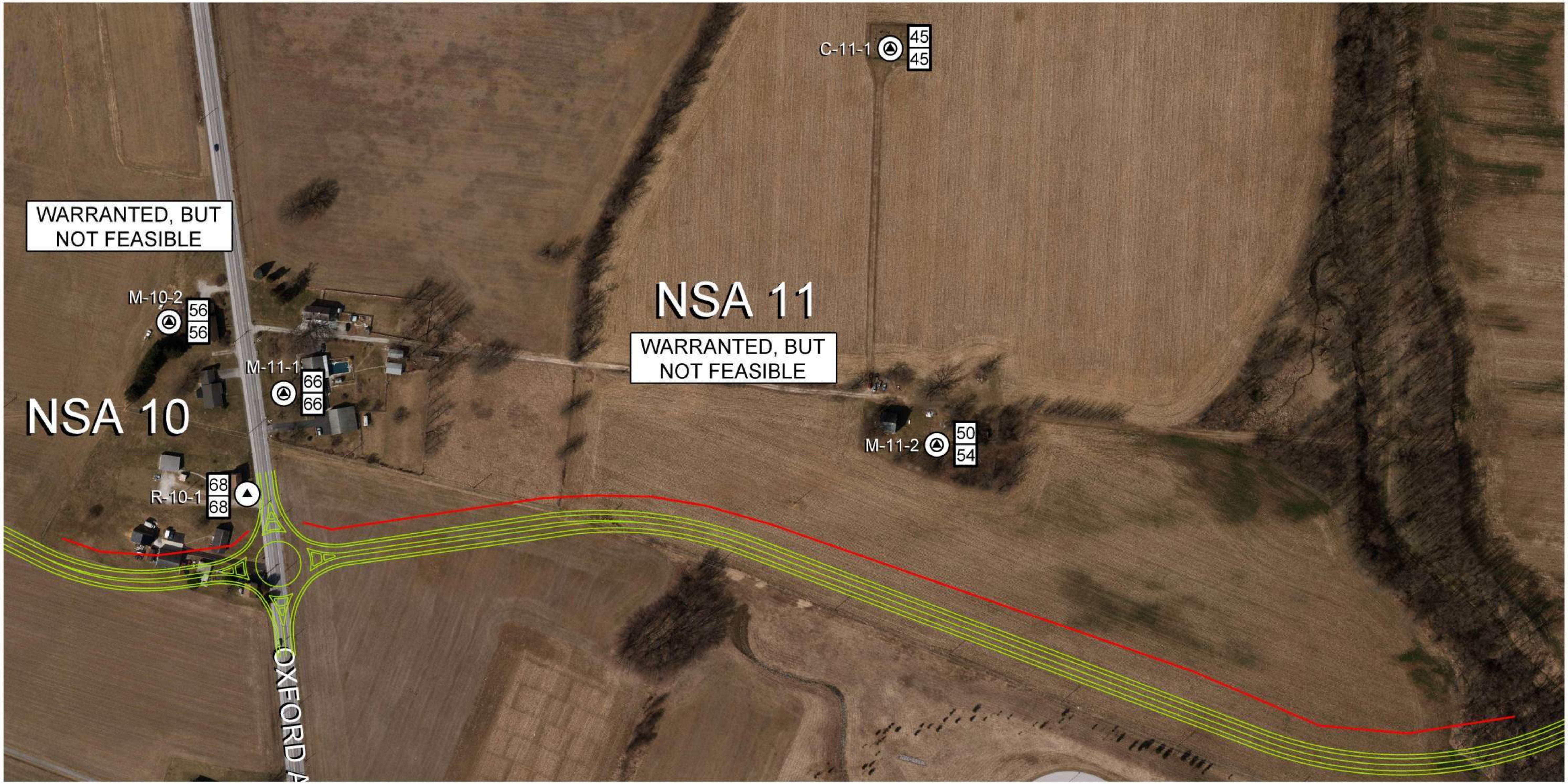
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

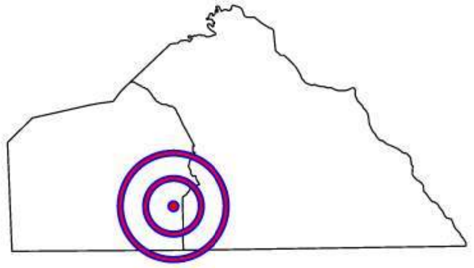
NSA 9 BARRIER BUILD MAP

Map No. 19

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\19- Prelim Noise Report- NSA 9 Barrier.dgn
9/11/2019



Adams and York Counties



Vicinity Map

Legend

M-1-1	Short Term Noise Measurement Site	R-1-1	Modeled Receptor
T-3-1	Modeled Trail Receptor	65	2042 Barrier Noise Level, Leq, dB(A)
		72	2042 No Barrier Noise Level, Leq, dB(A)
C-9-1	Modeled Cemetery Receptor	🟥	Optimized Noise Barrier

May 2019
REVISED
September 2019

PennDOT
District 8-0

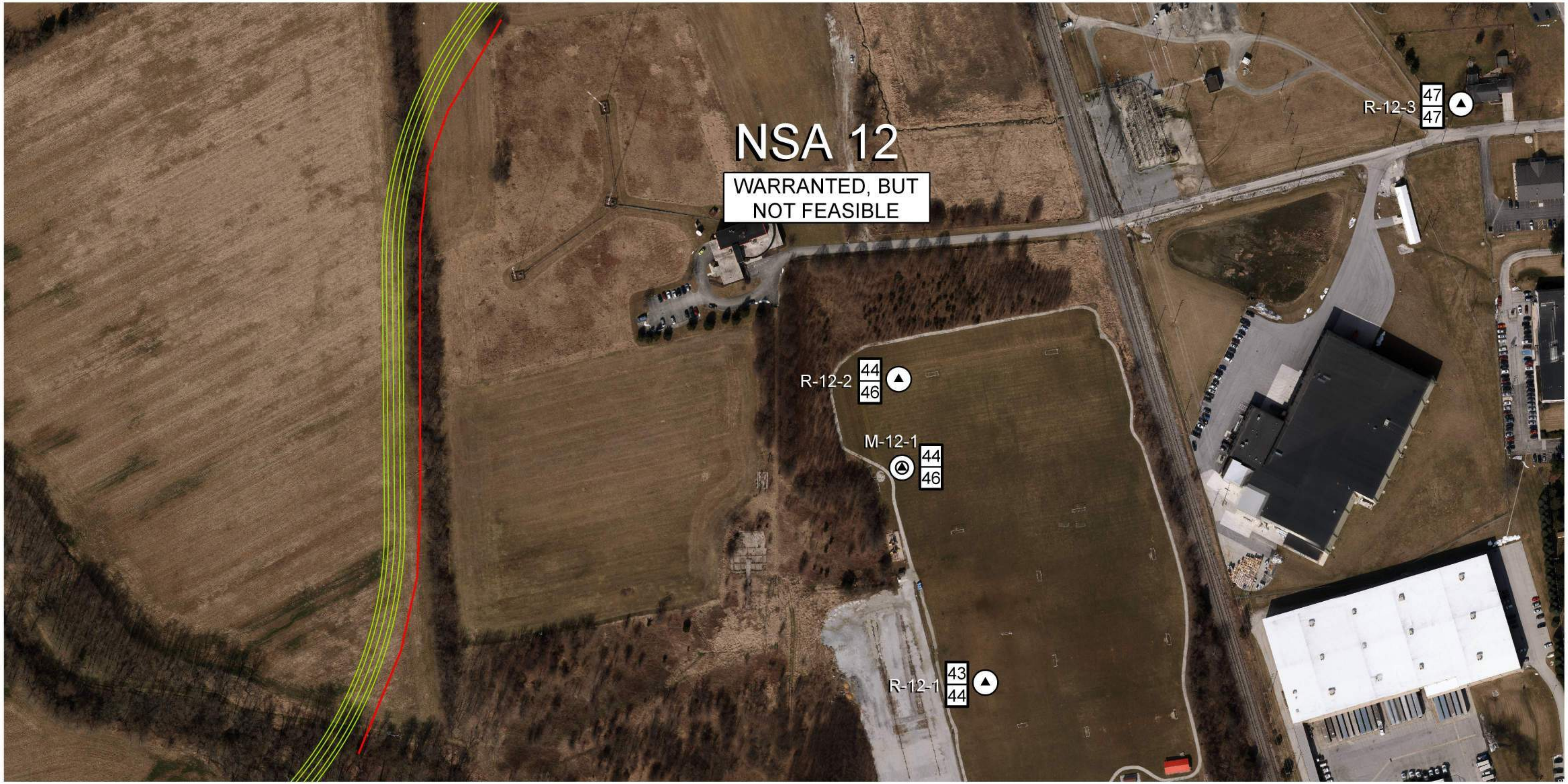
The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

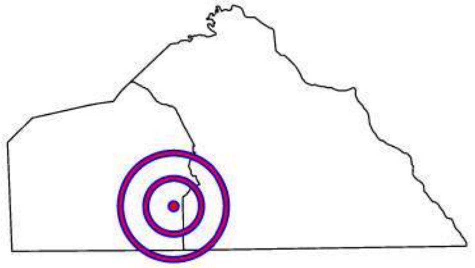
NSA 10 & 11 BARRIER BUILD MAP

Map No.20

\\fileserver\SCI-NET\01Projects\38027 Eisenhower Dr Ext - JMT\ENVIRONMENTAL\NOISE\CADD\Preliminary Report Maps\20- Prelim Noise Report- NSA 10&11 Barrier.dgn
9/11/2019



Adams and York Counties



Vicinity Map

0 100 200
Scale in Feet

Legend

M-1-1	Short Term Noise Measurement Site	R-1-1	Modeled Receptor
T-3-1	Modeled Trail Receptor	65	2042 Barrier Noise Level, Leq, dB(A)
C-9-1	Modeled Cemetery Receptor	72	2042 No Barrier Noise Level, Leq, dB(A)
		🟥	Optimized Noise Barrier

May 2019
REVISED
September 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Preliminary
Technical
Noise Report

NSA 12 BARRIER BUILD MAP

Map No. 21

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9/11/2019

Appendix A

NOISE MEASUREMENT DATA

INTRODUCTION

Short-term Noise Measurements were collected on March 27 & 28, 2019 for Alternate 5C. The first day (3/27/2019) of testing consisted of seven Noise Monitoring Sessions. The second day (3/28/2019) of testing consisted of eight 20-minute Noise Monitoring Sessions. All Noise Monitoring Sessions had traffic counts and speed collection running concurrently to the noise testing. **Table A.1** lists in chronological order the noise monitoring sessions conducted during this study within the Alternative 5C limits and describes the interval time and duration of each session and the on-site weather conditions.

Table A.1 Noise Monitoring Session Summary

Noise Monitoring Session	Date	Interval	Duration	Temp (degree F)	Relative Humidity (%)	Wind Speed (mph)	Wind Direction[1]
TMS-1	03/27/2019	9:00am-9:20am	20-min	27	73	0	NNE
TMS-2	03/27/2019	9:40am-10:00am	20-min	32	55	0	NNE
TMS-3	03/27/2019	10:20am-10:40am	20-min	37	38	1	NNE
TMS-4	03/27/2019	11:00am-11:20am	20-min	40	38	1	W
TMS-5	03/27/2019	11:40am-12:00pm	20-min	46	30	1	WSW
TMS-6	03/27/2019	1:00pm-1:20pm	20-min	52	21	2	W
TMS-7	03/27/2019	1:50pm-2:10pm	20-min	55	20	2	SW
TMS-8	03/28/2019	9:00am-9:20am	20-min	38	73	2	SW
TMS-9	03/28/2019	9:40am-10:00am	20-min	40	67	5	SSW
TMS-10	03/28/2019	10:20am-10:40am	20-min	42	64	6	SSW
TMS-11	03/28/2019	11:00am-11:20am	20-min	46	58	4	SW
TMS-12	03/28/2019	11:40am-12:00pm	20-min	50	51	7	SSW
TMS-13	03/28/2019	1:00pm-1:20pm	20-min	57	41	5	WSW
TMS-14	03/28/2019	1:40pm-2:00pm	20-min	58	37	7	SSW
TMS-15	03/28/2019	2:20pm-2:40pm	20-min	59	38	4	SW

1. *Wind direction is defined as the direction the wind is blowing FROM. For example, if the Wind Direction is North, then the wind is blowing FROM the North and to the South.*

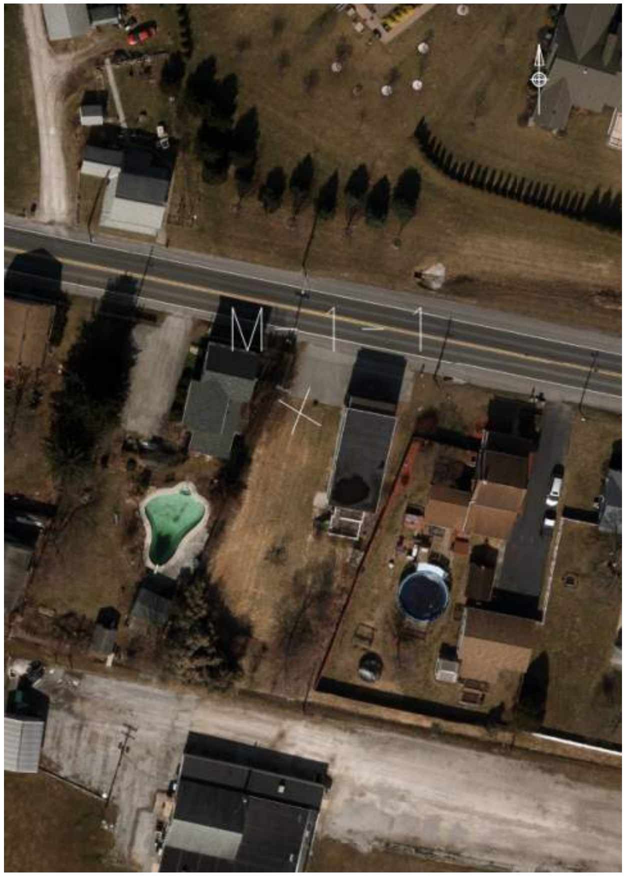
M-1-1 5585 Hanover Rd.	
DATE	March 27, 2019
START TIME	9:00 AM
END TIME	9:20 AM
TRAFFIC MONITORING SESSION	TMS-1
Leq (dBA)	64.3
LATITUDE	39° 47.846'
LONGITUDE	-77° 2.728'

Facing North towards SR 0116.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
9:00 AM	63.7	74.8	89.4
9:01 AM	64.6	72.4	85.8
9:02 AM	62.2	69.9	84.2
9:03 AM	64.4	75.4	89.6
9:04 AM	59.6	69.4	82.5
9:05 AM	63.8	75.6	89.0
9:06 AM	68.6	77.6	91.0
9:07 AM	62.8	71.4	85.2
9:08 AM	66.8	77.0	91.2
9:09 AM	60.5	72.6	87.3
9:10 AM	63.9	72.0	85.6
9:11 AM	65.3	70.9	85.3
9:12 AM	65.9	76.4	92.1
9:13 AM	60.2	69.0	83.5
9:14 AM	63.2	71.5	85.7
9:15 AM	65.8	72.7	86.3
9:16 AM	61.0	70.7	83.9
9:17 AM	64.2	73.3	86.3
9:18 AM	62.6	71.6	85.1
9:19 AM	65.8	72.0	86.2

<u>Non-Highway Noise</u>
NONE



M-2-1 5430 Hanover Rd.	
DATE	March 27, 2019
START TIME	9:00 AM
END TIME	9:20 AM
TRAFFIC MONITORING SESSION	TMS-1
Leq (dBA)	65.4
LATITUDE	39° 47' 54.4482"
LONGITUDE	-77° 3' 4.1292"

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
9:00 AM	64.5	69.7	93.7
9:01 AM	57.7	67.2	79.6
9:02 AM	66.6	75.5	92.6
9:03 AM	66.0	72.7	85.6
9:04 AM	66.7	78.8	94.1
9:05 AM	57.3	67.5	80.0
9:06 AM	71.2	80.7	96.3
9:07 AM	60.8	68.3	82.7
9:08 AM	65.0	73.2	88.0
9:09 AM	66.5	77.7	91.6
9:10 AM	66.1	70.8	84.0
9:11 AM	64.1	69.8	82.8
9:12 AM	65.4	75.1	89.1
9:13 AM	62.1	69.3	82.3
9:14 AM	65.8	71.2	86.7
9:15 AM	63.3	70.6	89.8
9:16 AM	64.9	72.1	84.8
9:17 AM	65.0	72.5	85.5
9:18 AM	64.1	72.9	86.3
9:19 AM	66.3	75.9	87.8

Non-Highway Noise
NONE

South facing viewing SR 0116.

M-3-1 5530 Hanover Rd.	
DATE	March 27, 2019
START TIME	9:40 AM
END TIME	10:00 AM
TRAFFIC MONITORING SESSION	TMS-2
Leq (dBA)	44.7
LATITUDE	39° 47' 57.771"
LONGITUDE	-77° 2' 55.6152"

North facing towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
~~9:40 AM~~	~~71.6~~	~~71.7~~	~~87.8~~
~~9:41 AM~~	~~71.6~~	~~71.7~~	~~87.7~~
~~9:42 AM~~	~~71.9~~	~~71.9~~	~~87.9~~
~~9:43 AM~~	~~71.9~~	~~71.9~~	~~87.9~~
~~9:44 AM~~	~~70.5~~	~~71.9~~	~~88.2~~
9:45 AM	49.6	56.2	69.1
9:46 AM	73.7	50.2	65.0
9:47 AM	45.2	51.4	66.5
9:48 AM	45.7	51.2	64.6
9:49 AM	43.7	50.8	71.8
9:50 AM	41.2	49.8	68.3
9:51 AM	42.7	49.4	68.0
9:52 AM	44.3	51.6	71.3
9:53 AM	44.2	50.6	70.6
9:54 AM	45.0	50.8	79.2
9:55 AM	40.7	43.2	69.6
9:56 AM	42.8	48.3	73.4
9:57 AM	40.5	49.3	74.9
9:58 AM	42.8	47.3	70.2
9:59 AM	47.1	51.2	79.0

Non-Highway Noise
9:40-9:45 AM - Undocumented Spike.

M-3-2 110 St. Michaels Way	
DATE	March 27, 2019
START TIME	9:40 AM
END TIME	10:00 AM
TRAFFIC MONITORING SESSION	TMS-2
Leq (dBA)	41.9
LATITUDE	39° 47.977'
LONGITUDE	-77° 2.691'

South facing towards St. Michaels Way and with proposed roadway at back.

Time History Report

TIME	**LAeq dB(A)**	**Lmax dB(A)**	**Lpk dB(C)**
9:40 AM	46.6	56.6	70.3
9:41 AM	48.3	59.7	73.6
9:42 AM	39.3	46.8	61.0
9:43 AM	44.9	57.3	87.7
9:44 AM	45.4	59.8	95.7
9:45 AM	42.6	48.5	70.6
9:46 AM	40.1	47.1	74.4
9:47 AM	38.5	44.2	77.2
9:48 AM	40.6	54.2	83.1
9:49 AM	37.0	40.4	53.2
9:50 AM	35.7	39.5	53.2
9:51 AM	37.2	41.1	56.2
9:52 AM	37.7	47.2	65.7
9:53 AM	37.1	46.4	62.7
9:54 AM	39.4	46.0	63.6
9:55 AM	35.5	41.2	58.0
9:56 AM	35.0	41.3	53.2
9:57 AM	38.1	42.8	67.7
9:58 AM	37.1	40.4	58.0
9:59 AM	43.4	49.9	67.2

Non-Highway Noise
NONE

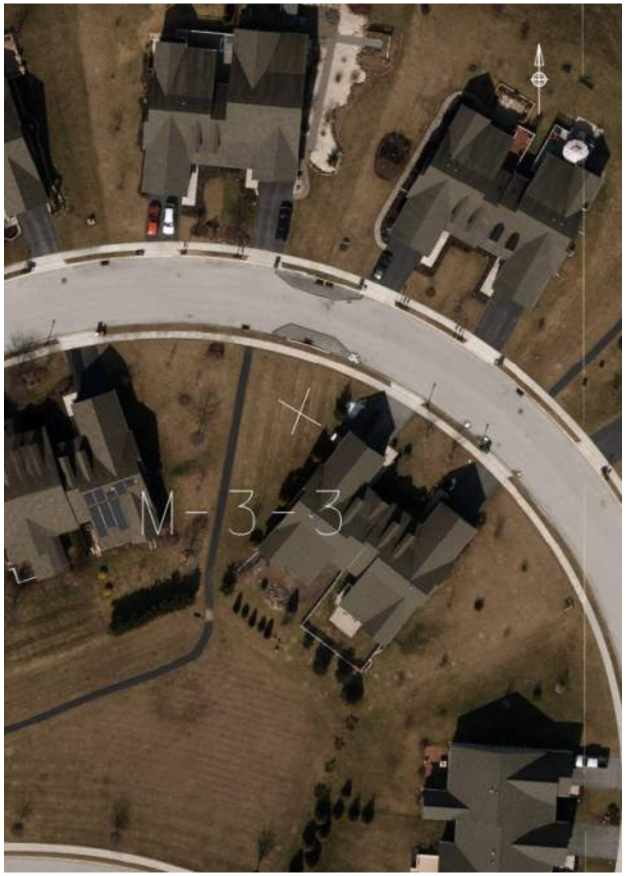
M-3-3 161 St. Michaels Way	
DATE	March 27, 2019
START TIME	10:20 AM
END TIME	10:40 AM
TRAFFIC MONITORING SESSION	TMS-3
Leq (dBA)	41.2
LATITUDE	39° 47' 57.1668"
LONGITUDE	-77° 2' 34.962"

North facing towards St. Michaels Way and proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
10:20 AM	40.6	48.4	72.1
10:21 AM	36.1	40.2	55.9
10:22 AM	37.3	43.5	60.9
10:23 AM	45.8	47.9	72.0
~~10:24 AM~~	~~46.6~~	~~47.3~~	~~61.2~~
~~10:25 AM~~	~~46.1~~	~~47.0~~	~~62.0~~
~~10:26 AM~~	~~45.8~~	~~46.4~~	~~60.3~~
~~10:27 AM~~	~~45.8~~	~~46.4~~	~~59.7~~
~~10:28 AM~~	~~49.0~~	~~58.7~~	~~73.0~~
~~10:29 AM~~	~~46.5~~	~~48.4~~	~~75.2~~
10:30 AM	46.0	49.3	70.1
10:31 AM	39.0	46.2	74.3
10:32 AM	37.4	40.8	59.0
10:33 AM	37.5	40.2	66.8
10:34 AM	38.6	41.6	59.8
10:35 AM	37.5	44.3	57.4
10:36 AM	44.5	54.2	68.9
10:37 AM	33.8	37.5	58.7
10:38 AM	42.5	50.3	65.0
10:39 AM	37.5	42.9	66.7

Non-Highway Noise
10:24-10:29 – Undocumented Spike



M-5-1 318 Barley Circle	
DATE	March 27, 2019
START TIME	10:20 AM
END TIME	10:40 AM
TRAFFIC MONITORING SESSION	TMS-3
Leq (dBA)	48.2
LATITUDE	39° 48.022'
LONGITUDE	-77° 2.486'

West facing towards Sunday Dr.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
10:20 AM	54.3	66.5	79.8
10:21 AM	47.6	59.8	74.4
10:22 AM	38.6	44.8	62.7
10:23 AM	51.0	63.1	79.9
10:24 AM	53.8	63.3	77.6
10:25 AM	49.6	59.7	81.8
10:26 AM	48.4	59.7	74.6
10:27 AM	41.0	53.3	81.3
10:28 AM	45.3	57.2	77.8
10:29 AM	39.3	47.2	67.8
10:30 AM	51.2	60.1	72.9
10:31 AM	35.6	41.9	70.8
10:32 AM	39.8	48.1	76.2
10:33 AM	34.5	36.0	58.0
10:34 AM	51.1	61.3	74.9
10:35 AM	33.7	38.9	53.2
10:36 AM	31.7	37.0	53.2
10:37 AM	32.8	36.3	53.2
10:38 AM	47.1	58.9	72.5
10:39 AM	48.5	59.2	73.1

Non-Highway Noise
NONE

M-5-2 58 Barley Circle	
DATE	March 27, 2019
START TIME	11:00 AM
END TIME	11:20 AM
TRAFFIC MONITORING SESSION	TMS-4
Leq (dBA)	48.5
LATITUDE	39° 48.209'
LONGITUDE	-77° 2.552'

West facing towards Sunday Dr.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
11:00 AM	53.0	65.9	81.5
11:01 AM	49.3	65.8	96.3
11:02 AM	41.1	55.0	79.8
11:03 AM	36.7	49.9	73.4
11:04 AM	46.0	57.3	74.9
11:05 AM	34.6	42.7	66.0
11:06 AM	34.9	39.4	65.2
11:07 AM	33.1	39.7	61.0
11:08 AM	49.8	59.4	73.6
11:09 AM	52.2	61.6	74.8
11:10 AM	50.7	59.0	72.2
11:11 AM	48.6	60.1	89.7
11:12 AM	37.5	43.4	72.8
11:13 AM	48.0	59.2	71.7
11:14 AM	49.3	59.5	73.0
11:15 AM	33.1	35.4	53.2
11:16 AM	51.6	61.2	75.4
11:17 AM	51.1	61.8	74.7
11:18 AM	47.6	59.8	72.0
11:19 AM	51.0	61.7	76.0

Non-Highway Noise
NONE

M-5-3 89 Barley Circle	
DATE	March 27, 2019
START TIME	11:00 AM
END TIME	11:20 AM
TRAFFIC MONITORING SESSION	TMS-4
Leq (dBA)	37.9
LATITUDE	39° 48' 12.0666"
LONGITUDE	-77° 2' 28.2588"

North facing towards Barley Circle.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
~~11:00 AM~~	~~52.0~~	~~64.9~~	~~80.6~~
11:01 AM	32.9	36.1	51.8
11:02 AM	32.0	34.8	48.6
11:03 AM	35.9	46.5	70.1
11:04 AM	35.4	39.0	53.2
11:05 AM	38.6	46.0	70.1
11:06 AM	36.0	41.5	66.1
11:07 AM	37.6	44.3	69.0
11:08 AM	35.5	39.8	65.2
11:09 AM	42.3	50.3	72.6
11:10 AM	41.3	47.5	66.9
11:11 AM	43.9	54.3	87.1
11:12 AM	39.4	48.9	82.3
11:13 AM	34.0	37.1	62.1
11:14 AM	36.2	49.0	85.1
11:15 AM	33.5	36.0	53.2
11:16 AM	35.3	39.5	63.4
11:17 AM	34.3	37.5	51.8
11:18 AM	36.5	41.9	58.8
11:19 AM	37.6	45.9	78.3

Non-Highway Noise
11:00 AM – Meter Set-up Sounds

M-4-1 310 Sunday Dr.	
DATE	March 27, 2019
START TIME	11:40 AM
END TIME	12:00 PM
TRAFFIC MONITORING SESSION	TMS-5
Leq (dBA)	50.1
LATITUDE	39° 48' 17.316"
LONGITUDE	-77° 2' 33.3954"

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
11:40 AM	49.4	59.9	74.2
11:41 AM	55.4	65.3	79.6
11:42 AM	48.4	57.9	71.4
11:43 AM	47.9	59.0	74.4
11:44 AM	56.2	65.7	78.5
11:45 AM	39.2	49.5	60.9
11:46 AM	34.1	40.3	69.0
11:47 AM	37.9	41.9	59.5
11:48 AM	51.4	59.0	73.7
11:49 AM	36.5	46.5	61.7
11:50 AM	37.9	45.6	60.5
11:51 AM	47.7	59.1	72.8
11:52 AM	49.0	60.8	75.1
11:53 AM	50.1	62.1	76.5
11:54 AM	45.5	58.7	76.2
11:55 AM	53.3	63.1	76.3
11:56 AM	38.9	45.0	63.2
11:57 AM	51.9	61.2	74.3
11:58 AM	52.7	62.6	78.0
11:59 AM	47.3	58.2	71.5

Non-Highway Noise
NONE

East facing towards Sunday Dr.

M-6-1 3426 Centennial Rd.	
DATE	March 27, 2019
START TIME	11:40 AM
END TIME	12:00 PM
TRAFFIC MONITORING SESSION	TMS-5
Leq (dBA)	65.8
LATITUDE	39° 48.342'
LONGITUDE	-77° 2.410'

West facing overlooking Centennial Rd.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
11:40 AM	66.8	80.9	94.2
~~11:41 AM~~	~~68.3~~	~~78.5~~	~~92.6~~
~~11:42 AM~~	~~70.8~~	~~79.6~~	~~93.3~~
~~11:43 AM~~	~~71.5~~	~~81.8~~	~~97.0~~
~~11:44 AM~~	~~71.8~~	~~81.5~~	~~95.3~~
~~11:45 AM~~	~~67.9~~	~~76.3~~	~~90.4~~
11:46 AM	38.4	46.5	73.5
~~11:47 AM~~	~~68.1~~	~~77.7~~	~~93.0~~
~~11:48 AM~~	~~70.5~~	~~80.2~~	~~94.3~~
11:49 AM	63.7	75.0	89.0
11:50 AM	67.8	77.0	91.5
~~11:51 AM~~	~~71.1~~	~~80.1~~	~~94.0~~
~~11:52 AM~~	~~68.2~~	~~77.6~~	~~91.1~~
~~11:53 AM~~	~~70.8~~	~~79.9~~	~~94.6~~
~~11:54 AM~~	~~70.8~~	~~80.3~~	~~94.4~~
11:55 AM	61.1	75.1	89.8
~~11:56 AM~~	~~68.1~~	~~79.1~~	~~93.4~~
11:57 AM	64.3	76.5	91.6
11:58 AM	66.7	78.2	93.0
11:59 AM	66.5	80.0	94.7

Non-Highway Noise
11:41-11:45 AM – Undocumented Spike
11:47-11:48 AM – Undocumented Spike
11:51-11:54 AM – Undocumented Spike
11:56 AM – Undocumented Spike

M-7-1 3326 Centennial Rd.	
DATE	March 27, 2019
START TIME	1:00 PM
END TIME	1:20 PM
TRAFFIC MONITORING SESSION	TMS-6
Leq (dBA)	66.2
LATITUDE	39° 48' 27.036"
LONGITUDE	-77° 2' 34.0548"

South facing towards Centennial Rd.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:00 PM	67.7	77.3	90.9
1:01 PM	66.2	76.8	90.3
1:02 PM	61.6	73.2	85.2
1:03 PM	66.9	77.5	92.5
1:04 PM	62.1	74.8	88.6
1:05 PM	65.9	74.8	87.9
1:06 PM	67.5	79.1	91.9
1:07 PM	67.4	78.5	91.7
1:08 PM	66.0	77.0	91.0
~~1:09 PM~~	~~71.7~~	~~82.4~~	~~98.9~~
1:10 PM	69.2	85.4	101.0
1:11 PM	65.7	75.1	89.1
~~1:12 PM~~	~~71.4~~	~~83.1~~	~~97.0~~
1:13 PM	67.7	75.5	88.1
~~1:14 PM~~	~~71.8~~	~~82.5~~	~~97.2~~
1:15 PM	66.0	76.1	91.5
1:16 PM	60.3	73.0	86.0
1:17 PM	66.1	75.0	87.5
~~1:18 PM~~	~~69.7~~	~~82.1~~	~~95.6~~
1:19 PM	39.1	46.6	74.6

Non-Highway Noise
1:09 PM – Undocumented Spike
1:12 PM - Loud Farm Equipment
1:14 PM – Undocumented Spike
1:18 PM – Undocumented Spike

M-7-2 271 Friendly Dr.	
DATE	March 27, 2019
START TIME	1:00 PM
END TIME	1:20 PM
TRAFFIC MONITORING SESSION	TMS-6
Leq (dBA)	35.4
LATITUDE	39° 48.556'
LONGITUDE	-77° 2.456'

Northwest facing with proposed roadway behind camera.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:00 PM	37.0	46.2	71.4
1:01 PM	34.2	46.8	74.0
1:02 PM	28.9	31.1	53.2
1:03 PM	29.6	32.5	53.2
1:04 PM	27.5	29.5	58.0
1:05 PM	28.2	30.5	53.2
1:06 PM	31.1	33.7	53.2
1:07 PM	38.3	44.2	74.0
1:08 PM	36.1	42.5	75.6
1:09 PM	42.2	50.1	72.9
1:10 PM	34.7	45.0	74.1
1:11 PM	29.6	34.9	56.2
1:12 PM	32.1	36.1	53.2
1:13 PM	38.0	53.4	78.8
1:14 PM	38.8	49.4	60.2
1:15 PM	32.8	37.8	64.0
1:16 PM	34.8	44.3	70.2
1:17 PM	34.1	42.2	67.3
1:18 PM	31.4	37.7	63.2
1:19 PM	29.6	31.8	53.2

Non-Highway Noise
NONE

M-8-1 5 Tiffany Ct.	
DATE	March 27, 2019
START TIME	1:50 PM
END TIME	2:10 PM
TRAFFIC MONITORING SESSION	TMS-7
Leq (dBA)	39.3
LATITUDE	39° 48' 29.4006"
LONGITUDE	-77° 2' 3.789"

North facing towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:50 PM	37.7	49.3	75.5
1:51 PM	29.4	33.3	52.9
1:52 PM	40.9	49.9	65.6
1:53 PM	34.4	41.0	66.0
1:54 PM	31.8	40.6	62.0
1:55 PM	31.7	39.9	62.8
1:56 PM	33.3	41.8	61.8
~~1:57 PM~~	~~52.3~~	~~67.9~~	~~101.4~~
1:58 PM	45.8	60.4	82.4
1:59 PM	45.0	55.9	77.6
2:00 PM	33.4	38.7	61.8
2:01 PM	32.3	39.2	70.8
2:02 PM	34.6	46.7	65.0
2:03 PM	40.9	47.7	73.6
2:04 PM	38.8	44.9	55.8
2:05 PM	33.4	37.7	56.9
2:06 PM	29.3	36.1	57.9
2:07 PM	41.9	55.6	82.4
2:08 PM	38.2	46.3	73.7
2:09 PM	35.4	46.3	68.8

Non-Highway Noise
1:57 PM Three gun shots

M-8-2 7 Sease Drive	
DATE	March 27, 2019
START TIME	1:50 PM
END TIME	2:10 PM
TRAFFIC MONITORING SESSION	TMS-7
Leq (dBA)	44.9
LATITUDE	39° 48.532'
LONGITUDE	-77° 1.912'

North facing towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:50 PM	43.3	43.9	88.0
1:51 PM	39.8	41.5	61.6
1:52 PM	39.9	41.2	61.0
1:53 PM	40.5	43.6	69.6
1:54 PM	43.1	55.6	82.1
1:55 PM	47.0	62.6	83.5
1:56 PM	42.6	53.7	83.5
1:57 PM	41.9	51.9	82.7
1:58 PM	42.6	44.6	70.3
1:59 PM	51.2	56.5	73.2
2:00 PM	50.2	55.3	71.4
2:01 PM	46.7	54.7	70.0
2:02 PM	43.9	44.6	58.0
2:03 PM	44.8	48.3	61.0
2:04 PM	45.6	50.0	76.0
2:05 PM	43.2	47.6	70.7
2:06 PM	40.3	43.4	60.2
2:07 PM	40.7	45.3	62.2
2:08 PM	40.0	41.9	56.2
2:09 PM	42.1	48.7	80.6

Non-Highway Noise
NONE

M-8-3 69 Conewago Dr.	
DATE	March 28, 2019
START TIME	9:00 AM
END TIME	9:20 AM
TRAFFIC MONITORING SESSION	TMS-8
Leq (dBA)	46.3
LATITUDE	39° 48' 31.2942"
LONGITUDE	-77° 1' 48.3522"

North facing towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
9:00 AM	~~62.2~~	~~68.4~~	~~85.8~~
9:01 AM	~~59.6~~	~~65.5~~	~~85.2~~
9:02 AM	~~58.7~~	~~63.5~~	~~84.8~~
9:03 AM	~~57.6~~	~~66.3~~	~~85.6~~
9:04 AM	~~48.7~~	~~63.5~~	~~85.3~~
9:05 AM	41.7	45.8	66.5
9:06 AM	41.4	44.5	63.2
9:07 AM	42.4	48.3	65.3
9:08 AM	42.3	46.5	65.0
9:09 AM	44.4	49.7	69.9
9:10 AM	44.5	52.5	71.4
9:11 AM	45.1	50.7	66.7
9:12 AM	48.2	54.5	72.0
9:13 AM	48.0	52.8	71.1
9:14 AM	46.8	53.7	70.8
9:15 AM	44.3	53.4	71.3
9:16 AM	45.9	54.4	72.8
9:17 AM	47.4	52.9	72.9
9:18 AM	47.0	52.6	71.4
9:19 AM	51.3	56.6	77.7

Non-Highway Noise
9:00-9:05 AM – Undocumented Spike

M-10-1 509 Church St.	
DATE	March 28, 2019
START TIME	9:00 AM
END TIME	9:20 AM
TRAFFIC MONITORING SESSION	TMS-8
Leq (dBA)	61.4
LATITUDE	39° 48.823'
LONGITUDE	-77° 1.784'

West facing overlooking Church St.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
9:00 AM	47.6	58.1	83.6
~~9:01 AM~~	~~67.3~~	~~77.3~~	~~90.9~~
9:02 AM	42.5	52.7	74.5
9:03 AM	42.3	48.6	67.0
~~9:04 AM~~	~~67.8~~	~~76.6~~	~~90.5~~
9:05 AM	63.1	75.8	97.3
9:06 AM	47.3	56.1	73.0
9:07 AM	44.9	52.2	69.4
9:08 AM	65.5	77.3	91.4
9:09 AM	63.1	75.4	88.8
9:10 AM	64.6	76.3	89.6
9:11 AM	65.7	77.8	90.8
9:12 AM	66.1	76.5	89.5
~~9:13 AM~~	~~68.1~~	~~77.1~~	~~91.5~~
9:14 AM	46.2	53.9	73.5
9:15 AM	61.7	74.3	87.0
9:16 AM	63.7	77.1	91.9
9:17 AM	40.1	42.8	63.6
9:18 AM	60.3	72.1	84.7
~~9:19 AM~~	~~69.6~~	~~80.9~~	~~94.5~~

Non-Highway Noise
9:01 AM – Undocumented Spike
9:04 AM – Undocumented Spike
9:13 AM – Undocumented Spike
9:19 AM – Undocumented Spike

M-9-1 28 Franklin Ct.	
DATE	March 28, 2019
START TIME	9:40 AM
END TIME	10:00 AM
TRAFFIC MONITORING SESSION	TMS-9
Leq (dBA)	40.8
LATITUDE	39° 48' 36.7734"
LONGITUDE	-77° 1' 30.6366"

North facing towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
9:40 AM	40.4	50.7	76.1
9:41 AM	39.4	41.3	60.3
9:42 AM	41.0	44.8	65.2
9:43 AM	40.6	45.1	65.4
9:44 AM	39.7	44.9	62.6
9:45 AM	40.7	42.7	60.2
~~9:46 AM~~	~~43.3~~	~~47.2~~	~~60.5~~
9:47 AM	42.5	46.3	70.0
9:48 AM	42.4	48.2	75.8
9:49 AM	42.1	47.7	77.5
9:50 AM	38.6	47.4	64.9
9:51 AM	40.0	46.4	64.9
9:52 AM	41.0	44.6	62.4
9:53 AM	39.6	41.2	55.8
9:54 AM	39.6	42.1	58.6
9:55 AM	41.7	45.1	64.5
9:56 AM	41.2	43.5	62.7
9:57 AM	40.2	42.2	66.8
9:58 AM	40.5	43.0	58.4
~~9:59 AM~~	~~74.9~~	~~87.6~~	~~106.3~~

Non-Highway Noise
9:46 AM Wind Gust and Airplane
9:59 AM Dog Barking

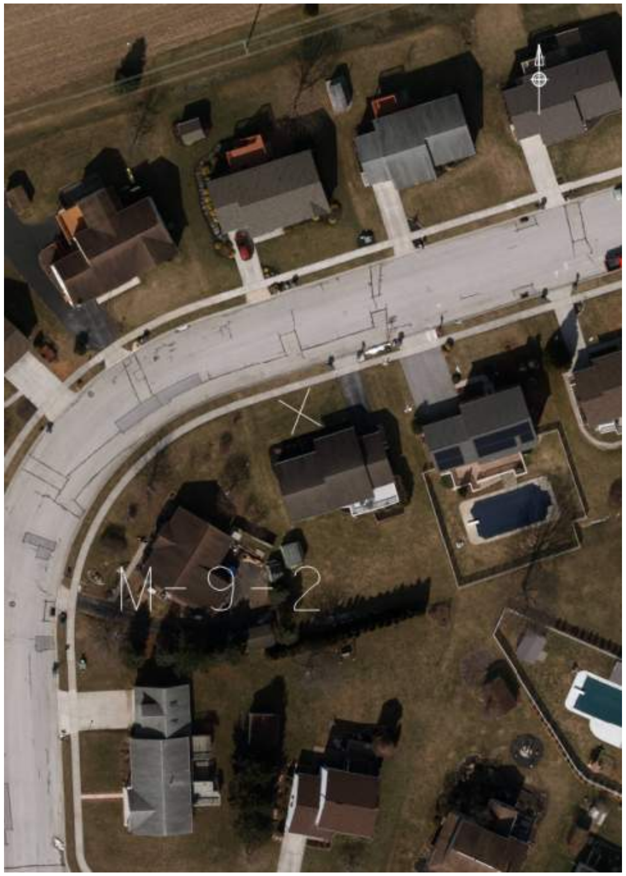
M-9-2 246 Johnathon Dr.	
DATE	March 28, 2019
START TIME	9:40 AM
END TIME	10:00 AM
TRAFFIC MONITORING SESSION	TMS-9
Leq (dBA)	39.4
LATITUDE	39° 48.654'
LONGITUDE	-77° 1.410'

South facing from Johnathon Drive.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
9:40 AM	39.6	43.9	70.8
9:41 AM	38.6	45.0	65.0
9:42 AM	38.6	45.1	61.6
9:43 AM	40.2	45.6	63.6
9:44 AM	37.4	43.7	59.2
9:45 AM	37.4	40.3	60.2
9:46 AM	42.1	48.7	64.0
9:47 AM	43.3	49.8	64.7
9:48 AM	39.9	44.7	68.9
9:49 AM	37.7	40.9	64.7
9:50 AM	40.5	46.3	73.9
9:51 AM	39.2	45.9	68.0
9:52 AM	40.0	50.2	66.8
9:53 AM	38.0	41.2	61.0
9:54 AM	37.6	42.7	62.2
9:55 AM	37.8	40.3	56.2
9:56 AM	38.7	43.2	60.2
9:57 AM	38.1	45.0	61.6
9:58 AM	37.4	43.4	62.2
9:59 AM	39.5	45.6	65.0

Non-Highway Noise
NONE



M-9-3 279 Johnathon Dr.	
DATE	March 28, 2019
START TIME	10:20 AM
END TIME	10:40 AM
TRAFFIC MONITORING SESSION	TMS-10
Leq (dBA)	39.2
LATITUDE	39° 48' 41.5794"
LONGITUDE	-77° 1' 21.7662"

Northwest facing towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
10:20 AM	38.6	43.9	63.7
10:21 AM	39.9	49.3	65.1
10:22 AM	38.5	43.8	60.4
10:23 AM	39.4	45.4	69.6
10:24 AM	40.1	44.8	72.7
10:25 AM	39.0	44.8	81.0
10:26 AM	40.9	50.4	78.5
10:27 AM	36.3	39.9	71.9
10:28 AM	37.8	43.8	62.6
10:29 AM	39.9	45.0	59.7
10:30 AM	39.2	43.0	58.4
10:31 AM	38.8	41.9	70.7
10:32 AM	39.8	42.9	71.5
~~10:33 AM~~	~~53.3~~	~~59.4~~	~~71.4~~
~~10:34 AM~~	~~48.0~~	~~57.7~~	~~69.3~~
10:35 AM	38.2	41.4	72.2
10:36 AM	38.4	43.1	61.6
10:37 AM	39.2	42.9	62.4
10:38 AM	39.2	44.9	64.0
10:39 AM	39.8	48.0	69.0

Non-Highway Noise
10:33 AM Airplane
10:34 AM Undocumented Spike

M-9-4 502 Providence Dr.

DATE	March 28, 2019
START TIME	10:20 AM
END TIME	10:40 AM
TRAFFIC MONITORING SESSION	TMS-10
Leq (dBA)	42.7
LATITUDE	39° 48.712'
LONGITUDE	-77° 1.239'

Northwest facing towards proposed Eisenhower extension.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
~~10:20 AM~~	~~59.8~~	~~66.1~~	~~80.4~~
~~10:21 AM~~	~~57.0~~	~~61.4~~	~~83.4~~
~~10:22 AM~~	~~57.7~~	~~63.2~~	~~83.3~~
~~10:23 AM~~	~~54.0~~	~~60.0~~	~~78.5~~
~~10:24 AM~~	~~56.5~~	~~62.3~~	~~77.5~~
~~10:25 AM~~	~~61.1~~	~~65.6~~	~~79.5~~
~~10:26 AM~~	~~58.4~~	~~66.2~~	~~80.5~~
~~10:27 AM~~	~~60.0~~	~~66.7~~	~~80.2~~
~~10:28 AM~~	~~58.3~~	~~63.6~~	~~79.1~~
~~10:29 AM~~	~~58.6~~	~~66.0~~	~~81.1~~
~~10:30 AM~~	~~55.8~~	~~63.3~~	~~78.1~~
~~10:31 AM~~	~~56.1~~	~~63.7~~	~~78.1~~
10:32 AM	43.7	48.4	67.5
~~10:33 AM~~	~~53.7~~	~~61.5~~	~~75.0~~
~~10:34 AM~~	~~48.6~~	~~57.6~~	~~81.6~~
10:35 AM	41.7	48.5	69.9
10:36 AM	41.2	43.9	59.2
10:37 AM	41.9	44.4	64.0
10:38 AM	41.4	46.2	62.2
10:39 AM	40.9	45.2	58.0

Non-Highway Noise
10:20 – 10:31 AM Windchimes on front porch
10:33 – 10:34 AM Windchimes on front porch

M-10-2 310 Oxford Ave.	
DATE	March 28, 2019
START TIME	11:00 AM
END TIME	11:20 AM
TRAFFIC MONITORING SESSION	TMS-11
Leq (dBA)	53.9
LATITUDE	39° 48' 50.8098"
LONGITUDE	-77° 1' 5.4762"

West facing with back to Oxford Ave.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
~~11:00 AM~~	~~62.9~~	~~72.6~~	~~89.5~~
~~11:01 AM~~	~~63.8~~	~~72.4~~	~~89.4~~
11:02 AM	49.8	60.9	85.2
11:03 AM	60.8	69.5	88.9
~~11:04 AM~~	~~66.6~~	~~72.1~~	~~89.1~~
11:05 AM	46.2	51.5	71.5
11:06 AM	51.1	61.3	75.4
11:07 AM	49.2	57.3	71.3
11:08 AM	50.5	61.2	77.1
11:09 AM	45.3	50.3	72.2
11:10 AM	50.7	58.7	73.8
11:11 AM	48.8	55.7	83.0
11:12 AM	48.3	50.4	78.4
11:13 AM	49.1	54.2	77.8
11:14 AM	54.3	65.3	77.4
11:15 AM	52.6	62.0	75.0
11:16 AM	51.7	60.0	76.9
11:17 AM	50.0	57.5	79.5
11:18 AM	48.5	54.3	81.2
~~11:19 AM~~	~~62.4~~	~~70.8~~	~~88.5~~

Non-Highway Noise
11:00 AM Undocumented Spike
11:01 AM Undocumented Spike
11:04 AM Airplane in Distance
11:19 AM Undocumented Spike

M-11-1 303 Oxford Ave.	
DATE	March 28, 2019
START TIME	11:00 AM
END TIME	11:20 AM
TRAFFIC MONITORING SESSION	TMS-11
Leq (dBA)	64.5
LATITUDE	39° 48.847'
LONGITUDE	-77° 1.034'

West facing towards Oxford Ave.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
11:00 AM	63.2	72.1	87.5
11:01 AM	65.5	73.8	86.9
11:02 AM	62.8	73.6	87.2
11:03 AM	61.5	70.0	86.7
11:04 AM	59.1	67.7	86.0
11:05 AM	64.2	73.1	90.7
11:06 AM	62.3	67.8	81.4
11:07 AM	62.4	73.3	86.1
11:08 AM	63.5	73.0	87.2
11:09 AM	61.1	69.2	81.8
11:10 AM	65.0	74.0	87.6
11:11 AM	62.8	69.4	81.7
11:12 AM	63.4	69.5	83.4
11:13 AM	61.6	68.1	82.0
11:14 AM	67.7	77.7	89.8
11:15 AM	67.2	79.3	95.8
11:16 AM	63.6	72.6	84.0
11:17 AM	65.4	72.6	85.3
11:18 AM	61.9	71.4	86.1
11:19 AM	69.7	80.0	92.3

Non-Highway Noise
NONE

M-11-2 305 Oxford Ave.	
DATE	March 28, 2019
START TIME	11:40 AM
END TIME	12:00 PM
TRAFFIC MONITORING SESSION	TMS-12
Leq (dBA)	48.3
LATITUDE	39° 48' 56.7684"
LONGITUDE	-77° 0' 47.268"

West facing towards Oxford Ave.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
11:40 AM	55.6	69.1	102.5
11:41 AM	54.1	69.2	95.1
11:42 AM	47.8	53.0	89.1
11:43 AM	44.5	47.3	70.1
11:44 AM	46.9	49.6	64.5
11:45 AM	44.6	48.9	64.1
11:46 AM	44.7	50.0	63.1
11:47 AM	44.4	49.0	61.6
11:48 AM	42.7	45.5	61.6
11:49 AM	45.5	48.2	69.2
11:50 AM	46.5	52.0	64.5
11:51 AM	45.3	49.4	76.0
11:52 AM	45.1	50.4	74.8
11:53 AM	48.0	51.9	67.3
11:54 AM	47.4	61.0	99.2
11:55 AM	45.7	52.1	80.4
11:56 AM	47.3	51.2	64.5
11:57 AM	47.3	54.1	70.6
11:58 AM	45.0	51.1	62.9
11:59 AM	46.6	52.3	65.3

Non-Highway Noise
NONE

M-9-5 182 Oxford Ave.	
DATE	March 28, 2019
START TIME	11:40 AM
END TIME	12:00 PM
TRAFFIC MONITORING SESSION	TMS-12
Leq (dBA)	50.5
LATITUDE	39° 48.692'
LONGITUDE	-77° 0.944'

Facing north towards proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
11:40 AM	46.9	52.0	82.9
11:41 AM	47.5	52.1	71.4
11:42 AM	49.4	55.6	70.4
11:43 AM	50.7	58.9	72.4
11:44 AM	52.4	56.9	70.4
11:45 AM	51.5	58.8	86.3
11:46 AM	50.4	58.3	80.5
11:47 AM	49.3	56.7	69.9
11:48 AM	47.1	52.8	84.7
11:49 AM	50.7	56.7	68.8
11:50 AM	52.0	56.9	70.8
11:51 AM	49.4	55.8	73.2
11:52 AM	47.1	56.6	78.1
11:53 AM	53.9	62.6	76.7
11:54 AM	49.4	55.6	70.1
11:55 AM	46.4	52.1	64.0
11:56 AM	52.0	62.0	75.5
11:57 AM	52.7	61.1	72.2
11:58 AM	47.3	52.6	65.2
11:59 AM	52.5	59.5	73.0

Non-Highway Noise
NONE

M-12-1 Utz Soccer Fields	
DATE	March 28, 2019
START TIME	1:00 PM
END TIME	1:20 PM
TRAFFIC MONITORING SESSION	TMS-13
Leq (dBA)	47.0
LATITUDE	39° 49' 4.0332"
LONGITUDE	-77° 0' 15.159"

Facing west towards High St.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:00 PM	47.8	54.4	68.2
1:01 PM	47.1	53.9	64.4
1:02 PM	47.0	51.5	65.3
1:03 PM	48.4	55.0	66.4
1:04 PM	45.2	47.9	61.6
1:05 PM	45.1	48.4	61.8
1:06 PM	46.5	48.1	61.6
1:07 PM	45.6	48.0	60.9
1:08 PM	45.4	47.5	61.2
1:09 PM	45.5	49.6	64.5
1:10 PM	45.4	51.9	80.9
1:11 PM	48.2	52.1	76.1
1:12 PM	46.6	49.5	74.6
1:13 PM	46.2	50.0	63.3
1:14 PM	45.8	47.0	61.5
1:15 PM	46.8	51.7	65.5
1:16 PM	47.7	54.3	65.0
1:17 PM	45.9	52.9	64.7
1:18 PM	51.6	58.9	69.1
1:19 PM	45.9	48.2	60.4

Non-Highway Noise
General truck traffic noted at nearby Utz Factory.

M-12-2 Mennonite School	
DATE	March 28, 2019
START TIME	1:00 PM
END TIME	1:20 PM
TRAFFIC MONITORING SESSION	TMS-13
Leq (dBA)	58.1
LATITUDE	39° 49.242'
LONGITUDE	-77° 0.016'

Facing northwest towards proposed road with back to High St.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:00 PM	59.7	66.4	85.8
1:01 PM	54.6	60.9	91.3
1:02 PM	60.4	70.9	86.9
1:03 PM	53.1	56.6	79.3
1:04 PM	54.9	59.9	88.9
1:05 PM	51.5	55.2	83.7
1:06 PM	54.3	59.8	72.6
1:07 PM	52.5	57.4	70.8
1:08 PM	58.9	64.2	83.8
1:09 PM	58.4	68.4	83.6
1:10 PM	53.8	58.7	77.1
1:11 PM	56.0	63.4	81.9
1:12 PM	52.3	57.9	70.8
1:13 PM	56.9	61.4	74.3
1:14 PM	57.0	63.9	77.4
1:15 PM	66.1	76.6	88.2
1:16 PM	57.0	66.6	80.2
1:17 PM	54.4	58.9	83.0
1:18 PM	54.3	57.3	70.2
1:19 PM	60.5	70.2	83.6

Non-Highway Noise
NONE

M-11-3 Trummer Family Dentistry	
DATE	March 28, 2019
START TIME	1:40 PM
END TIME	2:00 PM
TRAFFIC MONITORING SESSION	TMS-14
Leq (dBA)	53.9
LATITUDE	39° 49.347'
LONGITUDE	-77° 0.169'

North facing with back to proposed roadway.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
1:40 PM	53.7	54.4	72.1
1:41 PM	53.6	54.4	66.0
1:42 PM	53.3	54.2	68.2
1:43 PM	53.7	54.6	66.4
1:44 PM	54.1	55.7	69.4
1:45 PM	53.9	54.7	66.6
1:46 PM	53.5	53.9	63.6
1:47 PM	54.5	60.2	73.4
1:48 PM	53.1	53.9	65.2
1:49 PM	53.9	56.7	72.6
1:50 PM	54.6	60.4	75.2
1:51 PM	55.7	60.8	79.1
1:52 PM	53.6	54.4	68.4
~~1:53 PM~~	~~63.1~~	~~72.1~~	~~90.0~~
1:54 PM	54.1	57.2	72.5
1:55 PM	53.9	56.4	73.2
1:56 PM	53.6	54.5	71.1
1:57 PM	53.4	54.4	66.0
1:58 PM	53.4	54.6	65.0
1:59 PM	54.1	58.5	72.6

Non-Highway Noise
1:53 PM Motorcycle accelerating in parking lot.

M-13-1 Radio Rd.	
DATE	March 28, 2019
START TIME	2:20 PM
END TIME	2:40 PM
TRAFFIC MONITORING SESSION	TMS-15
Leq (dBA)	60.0
LATITUDE	39° 49' 12.0534"
LONGITUDE	-76° 59' 56.0436"

Facing west looking at High St.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
~~2:20 PM~~	~~72.9~~	~~73.9~~	~~91.4~~
~~2:21 PM~~	~~71.7~~	~~72.5~~	~~91.0~~
~~2:22 PM~~	~~72.0~~	~~73.4~~	~~91.5~~
~~2:23 PM~~	~~72.1~~	~~74.1~~	~~92.2~~
~~2:24 PM~~	~~69.1~~	~~75.3~~	~~92.2~~
2:25 PM	60.6	64.0	77.0
2:26 PM	60.2	65.1	77.9
2:27 PM	59.2	61.3	76.3
2:28 PM	60.8	66.0	79.9
2:29 PM	61.2	68.0	84.0
2:30 PM	59.7	66.6	82.4
2:31 PM	59.9	62.6	75.9
2:32 PM	60.1	69.3	99.6
2:33 PM	59.0	64.3	81.2
2:34 PM	60.3	65.3	79.5
2:35 PM	59.8	62.8	76.2
2:36 PM	59.4	63.3	76.2
~~2:37 PM~~	~~75.2~~	~~75.9~~	~~92.8~~
~~2:38 PM~~	~~75.4~~	~~75.5~~	~~92.2~~
~~2:39 PM~~	~~75.5~~	~~76.2~~	~~93.1~~

Non-Highway Noise
2:20 – 2:24 PM – Undocumented
2:37 – 2:39 PM - Undocumented

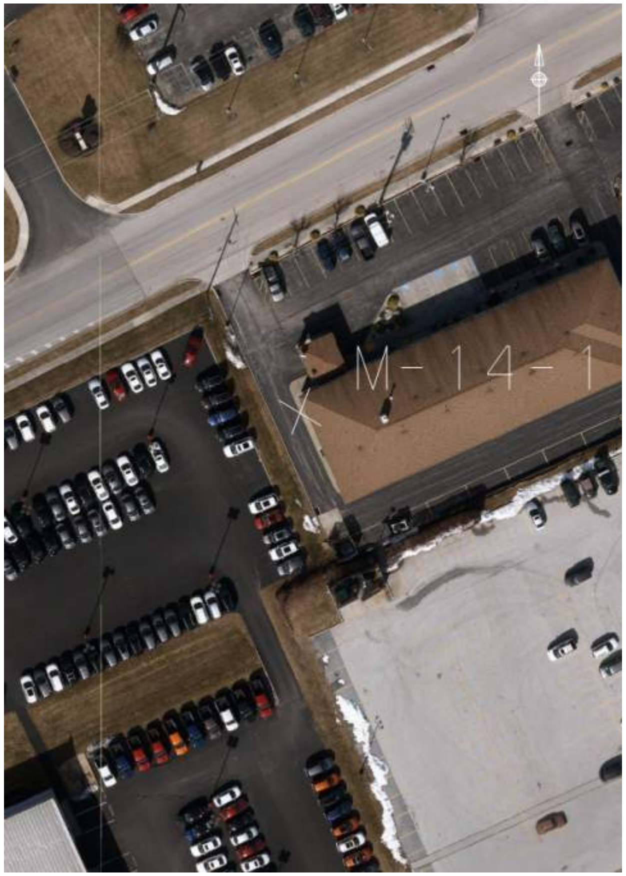
M-14-1 Super 8 Motel	
DATE	March 28, 2019
START TIME	2:20 PM
END TIME	2:40 PM
TRAFFIC MONITORING SESSION	TMS-15
Leq (dBA)	54.0
LATITUDE	39° 49.428'
LONGITUDE	-76° 59.965'

Facing south with back towards Wetzel Drive.

Time History Report

TIME	LAeq dB(A)	Lmax dB(A)	Lpk dB(C)
2:20 PM	53.5	60.6	77.0
2:21 PM	49.3	58.3	71.8
2:22 PM	53.8	61.4	77.2
2:23 PM	54.4	59.5	72.5
2:24 PM	50.6	57.5	85.1
2:25 PM	51.6	60.7	85.1
2:26 PM	48.2	50.2	65.2
2:27 PM	52.4	59.3	74.4
2:28 PM	50.6	58.7	82.1
2:29 PM	51.1	59.6	79.0
2:30 PM	52.7	58.6	80.8
2:31 PM	53.8	64.5	89.8
2:32 PM	51.3	58.3	74.8
2:33 PM	49.0	59.9	73.4
2:34 PM	46.4	48.7	61.6
2:35 PM	50.6	56.2	71.4
2:36 PM	56.5	62.2	79.6
2:37 PM	58.0	68.5	80.8
2:38 PM	60.2	71.3	84.9
~~2:39 PM~~	~~69.4~~	~~83.6~~	~~95.2~~

Non-Highway Noise
2:39 PM Sports Car Accelerating



(/)

Search Locations

Log in (/log...

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Popular Cities

San Francisco, CA
53°F Cloudy

Manhattan, NY
39°F Sunny

Schiller Pa
36°F Partl

Elev **548** ft, **39.80** °N, **77.04** °W

PA1- KPAHANOV8

HANOVER, PA (/WEATHER/US/PA/HANOVER/KPAHANOV8)

PWS DATA (/DASHBOARD/PWS/KPAHANOV8)

- MY DEVICES (/MEMBER/DEVICES)
- PWS DATA (/DASHBOARD/PWS/KPAHANOV8)
- COMMENTS (/DASHBOARD/PWS/KPAHANOV8/COMMENTS)
- PWS WIDGETS (/DASHBOARD/PWS/KPAHANOV8/WIDGETS)
- WUNDERSTATION (/WUNDERSTATION)

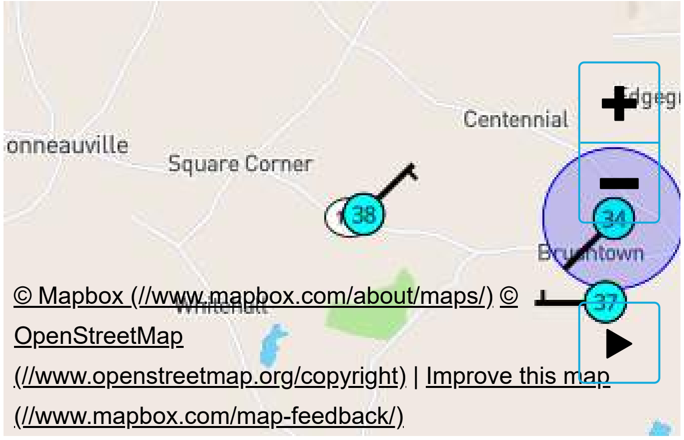
TEMPERATURE

CURRENT
34°

DEWPOINT
12°

HUMIDITY
40%

MAP



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lat=39.80235672&lon=-77.04216003&zoom=13&tl.play=

WIND

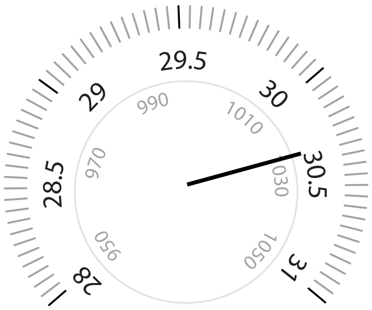
PRESSURE

WIND FROM

SW

GUST

5 mph



CURRENT

30.33

PRECIPITATION

PRECIP RATE

0

PRECIP TOTAL

0

UV

UNAVAILABLE

ASSOCIATED WEBCAM

No Associated webcam

Weather History for KPAHANOV8

Daily Mode | March | 27 | 2019

Previous **View** Next

Summary

March 27, 2019

	High	Low	Average
Temperature	**28** °F	**26** °F	**27** °F
Dew Point	**19** °F	**17** °F	**18** °F
Humidity	**73** %	**65** %	**70** %
Precipitation	**0.00** in	--	--

	High	Low	Average
Wind Speed	**0.0** mph	**0.0** mph	**0.0** mph
Wind Gust	**0.0** mph	**0.0** mph	**0.0** mph
Wind Direction	--	--	**NNE**
Pressure	**30.41** in	**30.39** in	--

Graph **Table**

March 27, 2019

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:04 AM	**27** °F	**18** °F	**67** %	**NNE**	**0.0** mph	**0.0** mph	**30.39** in	**0.00** in	**0.00** in		w/m²
12:09 AM	**27** °F	**18** °F	**66** %	**NNE**	**0.0** mph	**0.0** mph	**30.39** in	**0.00** in	**0.00** in		w/m²
12:14 AM	**28** °F	**18** °F	**65** %	**NNE**	**0.0** mph	**0.0** mph	**30.39** in	**0.00** in	**0.00** in		w/m²

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:19 AM	27 °F	18 °F	68 %	NNE	0.0 mph	0.0 mph	30.40 in	0.00 in	0.00 in		w/m²
12:24 AM	28 °F	19 °F	70 %	NNE	0.0 mph	0.0 mph	30.40 in	0.00 in	0.00 in		w/m²
12:29 AM	27 °F	19 °F	71 %	NNE	0.0 mph	0.0 mph	30.40 in	0.00 in	0.00 in		w/m²
12:34 AM	27 °F	19 °F	71 %	NNE	0.0 mph	0.0 mph	30.40 in	0.00 in	0.00 in		w/m²
12:39 AM	27 °F	19 °F	71 %	NNE	0.0 mph	0.0 mph	30.40 in	0.00 in	0.00 in		w/m²
12:44 AM	27 °F	19 °F	72 %	NNE	0.0 mph	0.0 mph	30.40 in	0.00 in	0.00 in		w/m²
12:49 AM	26 °F	19 °F	72 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
12:54 AM	26 °F	18 °F	72 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
12:59 AM	26 °F	19 °F	73 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
1:04 AM	26 °F	19 °F	73 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
1:09 AM	26 °F	19 °F	75 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
1:14 AM	25 °F	19 °F	76 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
1:19 AM	26 °F	19 °F	76 %	NNE	0.0 mph	0.0 mph	30.41 in	0.00 in	0.00 in		w/m²
1:24 AM	26 °F	20 °F	76 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:29 AM	26 °F	20 °F	77 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:34 AM	26 °F	20 °F	77 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:39 AM	26 °F	20 °F	76 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:44 AM	26 °F	20 °F	75 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:49 AM	26 °F	19 °F	75 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:54 AM	25 °F	19 °F	75 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
1:59 AM	25 °F	18 °F	75 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
2:04 AM	25 °F	18 °F	75 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
2:09 AM	25 °F	19 °F	77 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
2:14 AM	25 °F	19 °F	76 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
2:19 AM	25 °F	19 °F	76 %	NNE	0.0 mph	0.0 mph	30.42 in	0.00 in	0.00 in		w/m²
2:24 AM	25 °F	19 °F	77 %	NNE	0.0 mph	0.0 mph	30.43 in	0.00 in	0.00 in		w/m²
2:29 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
2:34 AM	**25** °F	**19** °F	**78** %	**NNE**	**0.0** mph	**1.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:39 AM	**25** °F	**19** °F	**79** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:44 AM	**25** °F	**19** °F	**79** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:49 AM	**24** °F	**19** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:54 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:59 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
3:04 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
3:09 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
3:14 AM	**24** °F	**18** °F	**79** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
3:19 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
3:24 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
3:29 AM	**23** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
3:34 AM	**24** °F	**19** °F	**80** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
3:39 AM	**24** °F	**19** °F	**80** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
3:44 AM	**23** °F	**18** °F	**79** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
3:49 AM	**23** °F	**17** °F	**79** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
3:54 AM	**23** °F	**18** °F	**80** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
3:59 AM	**23** °F	**18** °F	**80** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:04 AM	**24** °F	**18** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:09 AM	**24** °F	**17** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:14 AM	**24** °F	**17** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:19 AM	**24** °F	**17** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:24 AM	**24** °F	**17** °F	**73** %	**NNE**	**0.0** mph	**0.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:29 AM	**24** °F	**17** °F	**73** %	**NNE**	**0.0** mph	**0.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
4:34 AM	**24** °F	**17** °F	**72** %	**NNE**	**0.0** mph	**0.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
4:39 AM	**25** °F	**17** °F	**71** %	**NNE**	**0.0** mph	**0.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
4:44 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
4:49 AM	25 °F	18 °F	74 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
4:54 AM	25 °F	18 °F	76 %	NNE	0.0 mph	1.0 mph	30.45 in	0.00 in	0.00 in		w/m²
4:59 AM	24 °F	18 °F	76 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
5:04 AM	24 °F	18 °F	77 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
5:09 AM	24 °F	18 °F	76 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
5:14 AM	24 °F	18 °F	76 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
5:19 AM	24 °F	17 °F	76 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
5:24 AM	23 °F	17 °F	76 %	NNE	0.0 mph	0.0 mph	30.45 in	0.00 in	0.00 in		w/m²
5:29 AM	23 °F	17 °F	76 %	NNE	0.0 mph	0.0 mph	30.46 in	0.00 in	0.00 in		w/m²
5:34 AM	22 °F	16 °F	76 %	NNE	0.0 mph	0.0 mph	30.46 in	0.00 in	0.00 in		w/m²
5:39 AM	22 °F	16 °F	77 %	NNE	0.0 mph	0.0 mph	30.46 in	0.00 in	0.00 in		w/m²
5:44 AM	23 °F	16 °F	77 %	NNE	0.0 mph	0.0 mph	30.46 in	0.00 in	0.00 in		w/m²
5:49 AM	22 °F	16 °F	76 %	NNE	0.0 mph	0.0 mph	30.46 in	0.00 in	0.00 in		w/m²
5:54 AM	22 °F	16 °F	76 %	NNE	0.0 mph	0.0 mph	30.46 in	0.00 in	0.00 in		w/m²
5:59 AM	22 °F	16 °F	77 %	NNE	0.0 mph	0.0 mph	30.47 in	0.00 in	0.00 in		w/m²
6:04 AM	23 °F	17 °F	79 %	NNE	0.0 mph	0.0 mph	30.47 in	0.00 in	0.00 in		w/m²
6:09 AM	23 °F	17 °F	78 %	NNE	0.0 mph	0.0 mph	30.47 in	0.00 in	0.00 in		w/m²
6:14 AM	23 °F	17 °F	76 %	NNE	0.0 mph	0.0 mph	30.47 in	0.00 in	0.00 in		w/m²
6:19 AM	23 °F	17 °F	76 %	NNE	0.0 mph	0.0 mph	30.47 in	0.00 in	0.00 in		w/m²
6:24 AM	23 °F	17 °F	76 %	NNE	0.0 mph	0.0 mph	30.48 in	0.00 in	0.00 in		w/m²
6:29 AM	23 °F	16 °F	75 %	NNE	0.0 mph	0.0 mph	30.48 in	0.00 in	0.00 in		w/m²
6:34 AM	22 °F	16 °F	75 %	NNE	0.0 mph	0.0 mph	30.48 in	0.00 in	0.00 in		w/m²
6:39 AM	22 °F	15 °F	75 %	NNE	0.0 mph	0.0 mph	30.48 in	0.00 in	0.00 in		w/m²
6:44 AM	22 °F	16 °F	75 %	NNE	0.0 mph	0.0 mph	30.48 in	0.00 in	0.00 in		w/m²
6:49 AM	23 °F	16 °F	73 %	NNE	0.0 mph	0.0 mph	30.48 in	0.00 in	0.00 in		w/m²
6:54 AM	23 °F	16 °F	73 %	NNE	0.0 mph	0.0 mph	30.49 in	0.00 in	0.00 in		w/m²
6:59 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
7:04 AM	**23** °F	**15** °F	**73** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:09 AM	**22** °F	**15** °F	**73** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:14 AM	**23** °F	**16** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:19 AM	**23** °F	**16** °F	**74** %	**NNE**	**0.0** mph	**1.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:24 AM	**22** °F	**15** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:29 AM	**22** °F	**15** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:34 AM	**22** °F	**15** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:39 AM	**22** °F	**15** °F	**74** %	**NNE**	**0.0** mph	**0.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:44 AM	**22** °F	**15** °F	**75** %	**NNE**	**0.0** mph	**1.0** mph	**30.49** in	**0.00** in	**0.00** in		w/m²
7:49 AM	**23** °F	**16** °F	**76** %	**NNE**	**0.0** mph	**1.0** mph	**30.50** in	**0.00** in	**0.00** in		w/m²
7:54 AM	**23** °F	**16** °F	**76** %	**NNE**	**0.0** mph	**0.0** mph	**30.50** in	**0.00** in	**0.00** in		w/m²
7:59 AM	**23** °F	**16** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.50** in	**0.00** in	**0.00** in		w/m²
8:04 AM	**23** °F	**16** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.50** in	**0.00** in	**0.00** in		w/m²
8:09 AM	**23** °F	**16** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.51** in	**0.00** in	**0.00** in		w/m²
8:14 AM	**23** °F	**17** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.51** in	**0.00** in	**0.00** in		w/m²
8:19 AM	**24** °F	**17** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:24 AM	**24** °F	**18** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:29 AM	**24** °F	**18** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:34 AM	**25** °F	**18** °F	**76** %	**NNE**	**0.0** mph	**0.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:39 AM	**25** °F	**19** °F	**78** %	**NNE**	**0.0** mph	**1.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:44 AM	**26** °F	**20** °F	**79** %	**NNE**	**0.0** mph	**1.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:49 AM	**26** °F	**20** °F	**78** %	**NNE**	**0.0** mph	**0.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:54 AM	**27** °F	**20** °F	**75** %	**NNE**	**0.0** mph	**0.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
8:59 AM	**27** °F	**20** °F	**73** %	**NNE**	**0.0** mph	**1.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
9:04 AM	**28** °F	**19** °F	**70** %	**NNE**	**0.0** mph	**0.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
9:09 AM	**28** °F	**19** °F	**66** %	**NNE**	**0.0** mph	**0.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
9:14 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
9:19 AM	29 °F	19 °F	66 %	NNE	0.0 mph	0.0 mph	30.53 in	0.00 in	0.00 in		w/m²
9:24 AM	29 °F	19 °F	66 %	NNE	0.0 mph	0.0 mph	30.53 in	0.00 in	0.00 in		w/m²
9:29 AM	30 °F	19 °F	63 %	NNE	0.0 mph	0.0 mph	30.53 in	0.00 in	0.00 in		w/m²
9:34 AM	32 °F	19 °F	58 %	NNE	0.0 mph	0.0 mph	30.52 in	0.00 in	0.00 in		w/m²
9:39 AM	32 °F	18 °F	55 %	NNE	0.0 mph	0.0 mph	30.52 in	0.00 in	0.00 in		w/m²
9:44 AM	33 °F	18 °F	54 %	NNE	0.0 mph	1.0 mph	30.52 in	0.00 in	0.00 in		w/m²
9:49 AM	34 °F	18 °F	52 %	NNE	0.0 mph	1.0 mph	30.52 in	0.00 in	0.00 in		w/m²
9:54 AM	34 °F	18 °F	50 %	NNE	0.0 mph	0.0 mph	30.52 in	0.00 in	0.00 in		w/m²
9:59 AM	35 °F	17 °F	49 %	NNE	0.0 mph	1.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:04 AM	35 °F	17 °F	48 %	SE	0.0 mph	1.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:09 AM	35 °F	18 °F	48 %	South	0.0 mph	1.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:14 AM	37 °F	15 °F	40 %	WSW	2.0 mph	3.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:19 AM	37 °F	14 °F	38 %	NNE	1.0 mph	3.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:24 AM	37 °F	15 °F	38 %	SE	1.0 mph	3.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:29 AM	38 °F	16 °F	39 %	SSW	2.0 mph	2.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:34 AM	38 °F	15 °F	39 %	SSW	2.0 mph	3.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:39 AM	38 °F	16 °F	39 %	SE	2.0 mph	2.0 mph	30.52 in	0.00 in	0.00 in		w/m²
10:44 AM	39 °F	16 °F	39 %	SSE	1.0 mph	3.0 mph	30.53 in	0.00 in	0.00 in		w/m²
10:49 AM	39 °F	16 °F	39 %	South	1.0 mph	1.0 mph	30.53 in	0.00 in	0.00 in		w/m²
10:54 AM	40 °F	17 °F	38 %	WNW	2.0 mph	3.0 mph	30.53 in	0.00 in	0.00 in		w/m²
10:59 AM	40 °F	17 °F	38 %	West	1.0 mph	2.0 mph	30.53 in	0.00 in	0.00 in		w/m²
11:04 AM	40 °F	16 °F	38 %	SSW	1.0 mph	2.0 mph	30.52 in	0.00 in	0.00 in		w/m²
11:09 AM	42 °F	17 °F	36 %	NW	2.0 mph	3.0 mph	30.52 in	0.00 in	0.00 in		w/m²
11:14 AM	43 °F	15 °F	31 %	WSW	1.0 mph	3.0 mph	30.52 in	0.00 in	0.00 in		w/m²
11:19 AM	45 °F	14 °F	28 %	WNW	1.0 mph	2.0 mph	30.52 in	0.00 in	0.00 in		w/m²
11:24 AM	45 °F	16 °F	31 %	WSW	2.0 mph	2.0 mph	30.53 in	0.00 in	0.00 in		w/m²
11:29 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
11:34 AM	**44** °F	**17** °F	**32** %	**WSW**	**1.0** mph	**2.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
11:39 AM	**46** °F	**17** °F	**30** %		**1.0** mph	**1.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
11:44 AM	**45** °F	**17** °F	**31** %	**WNW**	**1.0** mph	**2.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
11:49 AM	**46** °F	**15** °F	**27** %	**WSW**	**1.0** mph	**1.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
11:54 AM	**48** °F	**16** °F	**27** %	**NNW**	**1.0** mph	**2.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
11:59 AM	**47** °F	**17** °F	**29** %		**1.0** mph	**2.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:04 PM	**49** °F	**14** °F	**24** %	**SSE**	**2.0** mph	**4.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:09 PM	**49** °F	**13** °F	**23** %	**SW**	**2.0** mph	**4.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:14 PM	**49** °F	**12** °F	**22** %	**SSW**	**3.0** mph	**4.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:19 PM	**49** °F	**15** °F	**25** %	**SSE**	**2.0** mph	**4.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:24 PM	**49** °F	**13** °F	**23** %	**SSW**	**1.0** mph	**2.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:29 PM	**51** °F	**11** °F	**20** %	**NNW**	**1.0** mph	**2.0** mph	**30.53** in	**0.00** in	**0.00** in		w/m²
12:34 PM	**52** °F	**13** °F	**20** %	**WNW**	**1.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
12:38 PM	**53** °F	**13** °F	**19** %	**SW**	**1.0** mph	**1.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
12:44 PM	**52** °F	**14** °F	**21** %	**WNW**	**1.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
12:49 PM	**50** °F	**16** °F	**25** %	**West**	**1.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
12:54 PM	**51** °F	**17** °F	**25** %	**SW**	**1.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
12:59 PM	**52** °F	**14** °F	**21** %	**West**	**2.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
1:04 PM	**53** °F	**12** °F	**18** %	**North**	**1.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
1:09 PM	**53** °F	**14** °F	**21** %	**WSW**	**2.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
1:14 PM	**53** °F	**15** °F	**21** %	**WSW**	**2.0** mph	**3.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
1:19 PM	**49** °F	**15** °F	**24** %	**East**	**1.0** mph	**2.0** mph	**30.52** in	**0.00** in	**0.00** in		w/m²
1:24 PM	**50** °F	**16** °F	**25** %	**NNE**	**3.0** mph	**3.0** mph	**30.51** in	**0.00** in	**0.00** in		w/m²
1:29 PM	**51** °F	**15** °F	**23** %	**North**	**3.0** mph	**4.0** mph	**30.51** in	**0.00** in	**0.00** in		w/m²
1:34 PM	**53** °F	**15** °F	**21** %	**West**	**1.0** mph	**3.0** mph	**30.51** in	**0.00** in	**0.00** in		w/m²
1:39 PM	**54** °F	**16** °F	**21** %	**SW**	**1.0** mph	**1.0** mph	**30.51** in	**0.00** in	**0.00** in		w/m²
1:44 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
1:49 PM	55 °F	15 °F	20 %	SW	2.0 mph	3.0 mph	30.51 in	0.00 in	0.00 in		w/m²
1:54 PM	56 °F	14 °F	19 %	NNW	1.0 mph	2.0 mph	30.51 in	0.00 in	0.00 in		w/m²
1:59 PM	53 °F	15 °F	21 %	WNW	2.0 mph	3.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:04 PM	55 °F	16 °F	21 %	West	1.0 mph	2.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:09 PM	55 °F	17 °F	22 %	SW	1.0 mph	2.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:14 PM	55 °F	17 °F	22 %	SW	4.0 mph	5.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:19 PM	55 °F	14 °F	19 %	SSW	2.0 mph	5.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:24 PM	57 °F	17 °F	20 %	North	1.0 mph	2.0 mph	30.49 in	0.00 in	0.00 in		w/m²
2:29 PM	55 °F	16 °F	21 %	NE	2.0 mph	4.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:34 PM	52 °F	19 °F	26 %	NE	1.0 mph	3.0 mph	30.50 in	0.00 in	0.00 in		w/m²
2:39 PM	56 °F	19 °F	23 %	SW	1.0 mph	2.0 mph	30.49 in	0.00 in	0.00 in		w/m²
2:44 PM	57 °F	16 °F	19 %	SW	1.0 mph	2.0 mph	30.49 in	0.00 in	0.00 in		w/m²
2:49 PM	58 °F	16 °F	18 %	SW	3.0 mph	4.0 mph	30.49 in	0.00 in	0.00 in		w/m²
2:54 PM	58 °F	17 °F	20 %	East	1.0 mph	3.0 mph	30.49 in	0.00 in	0.00 in		w/m²
2:59 PM	58 °F	17 °F	20 %	WNW	1.0 mph	3.0 mph	30.49 in	0.00 in	0.00 in		w/m²
3:04 PM	59 °F	18 °F	20 %	NW	2.0 mph	2.0 mph	30.48 in	0.00 in	0.00 in		w/m²
3:09 PM	59 °F	16 °F	18 %	SSE	1.0 mph	3.0 mph	30.48 in	0.00 in	0.00 in		w/m²
3:14 PM	55 °F	17 °F	21 %	NW	1.0 mph	2.0 mph	30.48 in	0.00 in	0.00 in		w/m²
3:19 PM	56 °F	20 °F	24 %	NW	1.0 mph	3.0 mph	30.47 in	0.00 in	0.00 in		w/m²
3:24 PM	55 °F	19 °F	23 %	SW	1.0 mph	2.0 mph	30.47 in	0.00 in	0.00 in		w/m²
3:29 PM	59 °F	20 °F	21 %	NNW	1.0 mph	2.0 mph	30.47 in	0.00 in	0.00 in		w/m²
3:34 PM	57 °F	20 °F	23 %	East	1.0 mph	2.0 mph	30.46 in	0.00 in	0.00 in		w/m²
3:39 PM	57 °F	20 °F	23 %	NNE	1.0 mph	2.0 mph	30.46 in	0.00 in	0.00 in		w/m²
3:44 PM	59 °F	18 °F	20 %	North	1.0 mph	3.0 mph	30.46 in	0.00 in	0.00 in		w/m²
3:49 PM	61 °F	19 °F	19 %	NW	1.0 mph	2.0 mph	30.46 in	0.00 in	0.00 in		w/m²
3:54 PM	60 °F	20 °F	20 %	WSW	2.0 mph	3.0 mph	30.46 in	0.00 in	0.00 in		w/m²
3:59 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
4:04 PM	**62** °F	**17** °F	**17** %	**WSW**	**1.0** mph	**2.0** mph	**30.46** in	**0.00** in	**0.00** in		w/m²
4:09 PM	**63** °F	**19** °F	**18** %	**NNW**	**1.0** mph	**2.0** mph	**30.46** in	**0.00** in	**0.00** in		w/m²
4:14 PM	**63** °F	**18** °F	**17** %	**West**	**2.0** mph	**3.0** mph	**30.46** in	**0.00** in	**0.00** in		w/m²
4:19 PM	**61** °F	**16** °F	**16** %	**SSW**	**2.0** mph	**3.0** mph	**30.46** in	**0.00** in	**0.00** in		w/m²
4:24 PM	**60** °F	**18** °F	**19** %	**WSW**	**1.0** mph	**3.0** mph	**30.46** in	**0.00** in	**0.00** in		w/m²
4:29 PM	**61** °F	**16** °F	**17** %	**SW**	**3.0** mph	**4.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
4:34 PM	**61** °F	**16** °F	**17** %	**SW**	**3.0** mph	**5.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
4:39 PM	**59** °F	**17** °F	**19** %	**SW**	**3.0** mph	**5.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
4:44 PM	**60** °F	**17** °F	**18** %	**SW**	**3.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:49 PM	**59** °F	**17** °F	**19** %	**West**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:54 PM	**60** °F	**15** °F	**17** %	**SW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
4:59 PM	**62** °F	**15** °F	**16** %	**SW**	**3.0** mph	**4.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
5:04 PM	**60** °F	**17** °F	**17** %	**SW**	**1.0** mph	**4.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
5:09 PM	**62** °F	**16** °F	**16** %	**SW**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
5:14 PM	**59** °F	**18** °F	**19** %	**NNW**	**2.0** mph	**4.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:19 PM	**59** °F	**17** °F	**19** %	**SSW**	**3.0** mph	**5.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:24 PM	**61** °F	**17** °F	**18** %	**ENE**	**2.0** mph	**5.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:29 PM	**60** °F	**18** °F	**19** %	**NNE**	**2.0** mph	**4.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:34 PM	**59** °F	**18** °F	**20** %	**NW**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:39 PM	**62** °F	**16** °F	**16** %	**SSW**	**1.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:44 PM	**62** °F	**16** °F	**16** %	**WSW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:49 PM	**62** °F	**16** °F	**16** %	**SW**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:54 PM	**62** °F	**16** °F	**16** %	**SW**	**3.0** mph	**4.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
5:59 PM	**60** °F	**17** °F	**18** %	**SW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
6:04 PM	**60** °F	**15** °F	**17** %	**SW**	**3.0** mph	**5.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
6:09 PM	**59** °F	**13** °F	**16** %	**SW**	**3.0** mph	**5.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
6:14 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
6:19 PM	60 °F	15 °F	17 %	NW	2.0 mph	2.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:24 PM	59 °F	15 °F	17 %	WSW	3.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:29 PM	60 °F	14 °F	16 %	SSW	4.0 mph	5.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:34 PM	59 °F	14 °F	16 %	SW	3.0 mph	5.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:39 PM	58 °F	13 °F	16 %	NNW	4.0 mph	6.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:44 PM	58 °F	14 °F	17 %	SSW	3.0 mph	5.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:49 PM	59 °F	14 °F	17 %	SSW	3.0 mph	5.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:54 PM	59 °F	15 °F	18 %	SSW	1.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
6:59 PM	60 °F	17 °F	19 %	SW	2.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:04 PM	58 °F	18 °F	20 %	SW	2.0 mph	4.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:09 PM	59 °F	18 °F	19 %	West	1.0 mph	2.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:14 PM	57 °F	19 °F	21 %	WNW	1.0 mph	2.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:19 PM	58 °F	18 °F	21 %	WSW	2.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:24 PM	58 °F	18 °F	21 %	WSW	2.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:29 PM	57 °F	18 °F	21 %	NW	2.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
7:34 PM	56 °F	18 °F	22 %	West	2.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
7:39 PM	55 °F	17 °F	22 %	WSW	2.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
7:44 PM	55 °F	19 °F	24 %	West	2.0 mph	4.0 mph	30.43 in	0.00 in	0.00 in		w/m²
7:49 PM	54 °F	19 °F	25 %	NNE	2.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
7:54 PM	52 °F	18 °F	26 %	West	2.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
7:59 PM	50 °F	18 °F	28 %	West	3.0 mph	4.0 mph	30.43 in	0.00 in	0.00 in		w/m²
8:04 PM	48 °F	17 °F	28 %	NNW	3.0 mph	4.0 mph	30.43 in	0.00 in	0.00 in		w/m²
8:09 PM	47 °F	17 °F	30 %	NW	2.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
8:14 PM	46 °F	17 °F	30 %	NNW	2.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
8:19 PM	46 °F	17 °F	31 %	NNW	1.0 mph	3.0 mph	30.43 in	0.00 in	0.00 in		w/m²
8:24 PM	45 °F	18 °F	32 %	West	1.0 mph	1.0 mph	30.43 in	0.00 in	0.00 in		w/m²
8:29 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
8:34 PM	**44** °F	**18** °F	**34** %	**NE**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:39 PM	**44** °F	**18** °F	**35** %	**SSW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:44 PM	**43** °F	**17** °F	**35** %	**ESE**	**0.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:49 PM	**43** °F	**17** °F	**35** %	**ESE**	**1.0** mph	**1.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:54 PM	**42** °F	**17** °F	**34** %	**SSW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:59 PM	**42** °F	**16** °F	**34** %	**WNW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:04 PM	**42** °F	**16** °F	**34** %	**NW**	**1.0** mph	**1.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:09 PM	**42** °F	**15** °F	**34** %	**West**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:14 PM	**42** °F	**15** °F	**34** %	**WNW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:19 PM	**41** °F	**15** °F	**34** %	**NW**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:24 PM	**41** °F	**15** °F	**34** %	**East**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:29 PM	**41** °F	**15** °F	**34** %	**West**	**1.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:34 PM	**41** °F	**15** °F	**35** %	**SW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:39 PM	**41** °F	**16** °F	**36** %	**NW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:44 PM	**41** °F	**16** °F	**36** %	**South**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
9:49 PM	**41** °F	**16** °F	**37** %	**SSE**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
9:54 PM	**40** °F	**16** °F	**37** %	**North**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
9:59 PM	**40** °F	**17** °F	**38** %	**NW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:04 PM	**40** °F	**17** °F	**38** %	**NNE**	**1.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
10:09 PM	**40** °F	**17** °F	**38** %	**South**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:14 PM	**40** °F	**17** °F	**39** %	**SSE**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:19 PM	**40** °F	**17** °F	**39** %	**WSW**	**2.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:24 PM	**40** °F	**17** °F	**39** %	**WNW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:29 PM	**40** °F	**17** °F	**39** %		**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:34 PM	**40** °F	**17** °F	**39** %	**West**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:39 PM	**39** °F	**17** °F	**39** %	**NE**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:44 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
10:49 PM	**39** °F	**17** °F	**40** %	**ESE**	**0.0** mph	**1.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:54 PM	**39** °F	**17** °F	**40** %	**East**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
10:59 PM	**39** °F	**17** °F	**40** %	**NE**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:04 PM	**39** °F	**18** °F	**41** %	**NE**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:09 PM	**39** °F	**18** °F	**42** %	**NNE**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:14 PM	**39** °F	**18** °F	**43** %	**NNE**	**1.0** mph	**1.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:19 PM	**39** °F	**18** °F	**43** %	**East**	**1.0** mph	**1.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:24 PM	**39** °F	**18** °F	**42** %	**NNW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:29 PM	**39** °F	**18** °F	**42** %	**WSW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
11:34 PM	**39** °F	**18** °F	**42** %	**ENE**	**0.0** mph	**2.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
11:39 PM	**39** °F	**18** °F	**43** %	**ENE**	**0.0** mph	**1.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
11:44 PM	**39** °F	**18** °F	**43** %	**SSE**	**1.0** mph	**2.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
11:49 PM	**39** °F	**19** °F	**43** %	**South**	**0.0** mph	**2.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
11:54 PM	**38** °F	**19** °F	**46** %	**South**	**1.0** mph	**2.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
11:59 PM	**37** °F	**19** °F	**47** %	**South**	**1.0** mph	**1.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
	37 °F	**19** °F	**47** %	**South**	**0.0** mph	**1.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
	37 °F	**18** °F	**46** %	**South**	**0.0** mph	**0.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
	37 °F	**19** °F	**46** %	**South**	**0.0** mph	**1.0** mph	**30.45** in	**0.00** in	**0.00** in		w/m²
	37 °F	**19** °F	**46** %	**South**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
	37 °F	**19** °F	**46** %	**South**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
	38 °F	**19** °F	**46** %	**South**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
	38 °F	**20** °F	**47** %	**NW**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
	38 °F	**21** °F	**49** %	**East**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
	38 °F	**21** °F	**51** %	**SSW**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
	38 °F	**22** °F	**52** %	**West**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²

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Analytics Partners (/company/analytics-partners)

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Search Locations

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Popular Cities

San Francisco, CA
56°F Cloudy

Manhattan, NY
40°F Sunny

Schiller Pa
39°F Clou

Elev **548** ft, **39.80** °N, **77.04** °W

PA1- KPAHANOV8

HANOVER, PA (/WEATHER/US/PA/HANOVER/KPAHANOV8)

PWS DATA (/DASHBOARD/PWS/KPAHANOV8)

- MY DEVICES (/MEMBER/DEVICES)
- PWS DATA (/DASHBOARD/PWS/KPAHANOV8)
- COMMENTS (/DASHBOARD/PWS/KPAHANOV8/COMMENTS)
- PWS WIDGETS (/DASHBOARD/PWS/KPAHANOV8/WIDGETS)
- WUNDERSTATION (/WUNDERSTATION)

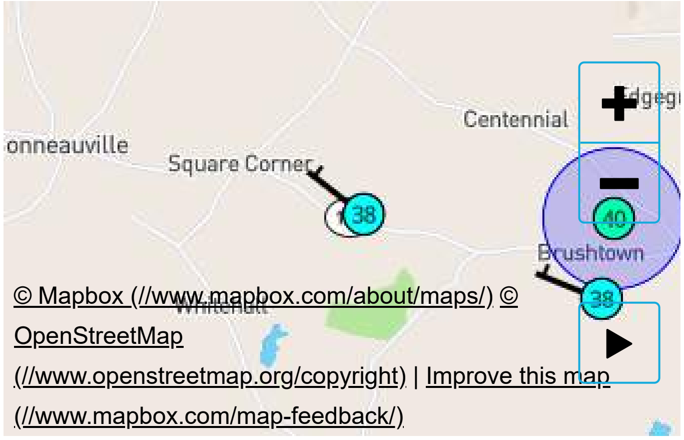
TEMPERATURE

CURRENT
40°

DEWPOINT
14°

HUMIDITY
34%

MAP



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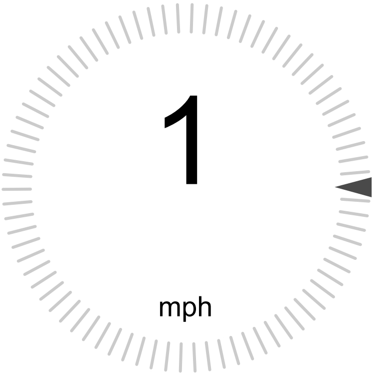
lat=39.80235672&lon=-77.04216003&zoom=13&tl.play=

WIND

PRESSURE

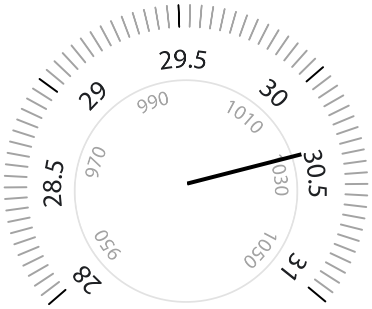


WIND FROM

E

GUST

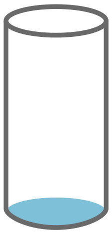
1 mph



CURRENT

30.34

PRECIPITATION



PRECIP RATE

0

PRECIP TOTAL

0

UV

UNAVAILABLE

ASSOCIATED WEBCAM

No Associated webcam

Weather History for KPAHANOV8

Daily Mode | March | 28 | 2019

Previous **View** Next

Summary

March 28, 2019

	High	Low	Average
Temperature	**38** °F	**37** °F	**37** °F
Dew Point	**26** °F	**23** °F	**24** °F
Humidity	**64** %	**54** %	**59** %
Precipitation	**0.00** in	--	--

	High	Low	Average
Wind Speed	**6.0** mph	**0.0** mph	**1.0** mph
Wind Gust	**6.0** mph	**6.0** mph	**2.0** mph
Wind Direction	--	--	**West**
Pressure	**30.44** in	**30.44** in	--

Graph **Table**

March 28, 2019

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:04 AM	**38** °F	**23** °F	**54** %	**NNW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:09 AM	**37** °F	**23** °F	**55** %	**SW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:14 AM	**37** °F	**24** °F	**57** %	**South**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:19 AM	**37** °F	**24** °F	**58** %	**SE**	**1.0** mph	**4.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:24 AM	**37** °F	**24** °F	**59** %	**SW**	**1.0** mph	**4.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:29 AM	**37** °F	**24** °F	**60** %	**SW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:34 AM	**37** °F	**25** °F	**61** %	**SW**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:39 AM	**37** °F	**25** °F	**61** %	**SSE**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:44 AM	**37** °F	**25** °F	**61** %	**SSW**	**1.0** mph	**1.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:49 AM	**37** °F	**25** °F	**62** %	**WSW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:54 AM	**37** °F	**25** °F	**62** %	**WSW**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
12:59 AM	**37** °F	**25** °F	**63** %	**SW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:04 AM	**37** °F	**26** °F	**64** %	**SE**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:09 AM	**36** °F	**25** °F	**64** %	**South**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:14 AM	**36** °F	**26** °F	**65** %	**SSE**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:19 AM	**36** °F	**26** °F	**65** %	**South**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:24 AM	**36** °F	**26** °F	**65** %	**SSW**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:29 AM	**36** °F	**26** °F	**66** %	**SW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:34 AM	**36** °F	**26** °F	**66** %	**SW**	**1.0** mph	**1.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:39 AM	**36** °F	**26** °F	**66** %	**SSW**	**1.0** mph	**2.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:44 AM	**36** °F	**26** °F	**67** %	**South**	**1.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:49 AM	**36** °F	**26** °F	**67** %	**SW**	**2.0** mph	**5.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
1:54 AM	**36** °F	**26** °F	**68** %	**South**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
1:59 AM	**36** °F	**26** °F	**68** %	**SSW**	**2.0** mph	**3.0** mph	**30.44** in	**0.00** in	**0.00** in		w/m²
2:04 AM	**36** °F	**26** °F	**68** %	**SSW**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:09 AM	**36** °F	**27** °F	**68** %	**SSW**	**3.0** mph	**5.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:14 AM	**36** °F	**27** °F	**69** %	**SSW**	**2.0** mph	**4.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:19 AM	**36** °F	**27** °F	**69** %	**SW**	**2.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:24 AM	**36** °F	**27** °F	**69** %	**South**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:29 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
2:34 AM	**36** °F	**27** °F	**69** %	**SW**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
2:39 AM	**36** °F	**27** °F	**70** %	**SSW**	**2.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
2:44 AM	**36** °F	**27** °F	**70** %	**WSW**	**2.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
2:49 AM	**35** °F	**27** °F	**71** %	**NNE**	**1.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
2:54 AM	**35** °F	**27** °F	**71** %	**South**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
2:59 AM	**35** °F	**27** °F	**71** %	**SE**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
3:04 AM	**35** °F	**27** °F	**71** %	**SSW**	**2.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
3:09 AM	**35** °F	**27** °F	**71** %	**SSE**	**0.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
3:14 AM	**35** °F	**27** °F	**72** %	**SSW**	**1.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
3:19 AM	**35** °F	**27** °F	**72** %	**West**	**2.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
3:24 AM	**35** °F	**27** °F	**73** %	**SW**	**2.0** mph	**3.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
3:29 AM	**35** °F	**27** °F	**73** %	**SW**	**1.0** mph	**3.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
3:34 AM	**35** °F	**27** °F	**73** %	**SW**	**2.0** mph	**4.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
3:39 AM	**35** °F	**27** °F	**73** %	**SSW**	**2.0** mph	**4.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
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4:09 AM	**34** °F	**27** °F	**74** %	**SW**	**0.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:14 AM	**34** °F	**27** °F	**74** %	**SSW**	**1.0** mph	**3.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:19 AM	**34** °F	**27** °F	**74** %	**SSW**	**1.0** mph	**3.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:24 AM	**34** °F	**27** °F	**74** %	**SW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:29 AM	**34** °F	**27** °F	**74** %	**SW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:34 AM	**34** °F	**27** °F	**74** %	**SW**	**1.0** mph	**3.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:39 AM	**34** °F	**27** °F	**75** %	**SW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:44 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
4:49 AM	**34** °F	**27** °F	**75** %	**SW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:54 AM	**34** °F	**27** °F	**75** %	**WSW**	**1.0** mph	**1.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
4:59 AM	**34** °F	**26** °F	**75** %	**WSW**	**0.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:04 AM	**33** °F	**27** °F	**75** %	**WSW**	**1.0** mph	**1.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:09 AM	**33** °F	**27** °F	**76** %	**WSW**	**1.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:14 AM	**33** °F	**27** °F	**76** %	**SW**	**1.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:19 AM	**33** °F	**27** °F	**76** %	**WSW**	**1.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:24 AM	**33** °F	**27** °F	**76** %	**WSW**	**0.0** mph	**1.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:29 AM	**33** °F	**26** °F	**76** %	**WSW**	**0.0** mph	**1.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:34 AM	**33** °F	**26** °F	**76** %	**WSW**	**1.0** mph	**3.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:39 AM	**33** °F	**27** °F	**76** %	**WSW**	**1.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:44 AM	**33** °F	**27** °F	**76** %	**SW**	**1.0** mph	**3.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:49 AM	**33** °F	**27** °F	**76** %	**SSW**	**1.0** mph	**3.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:54 AM	**33** °F	**27** °F	**76** %	**SSW**	**1.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
5:59 AM	**33** °F	**27** °F	**77** %	**SW**	**1.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
6:04 AM	**33** °F	**27** °F	**77** %	**WSW**	**0.0** mph	**2.0** mph	**30.40** in	**0.00** in	**0.00** in		w/m²
6:09 AM	**33** °F	**26** °F	**77** %	**WSW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:14 AM	**33** °F	**26** °F	**77** %	**SW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:19 AM	**33** °F	**27** °F	**77** %	**SW**	**1.0** mph	**3.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:24 AM	**33** °F	**26** °F	**77** %	**WSW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:29 AM	**33** °F	**27** °F	**78** %	**WSW**	**1.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:34 AM	**33** °F	**27** °F	**78** %	**WSW**	**0.0** mph	**2.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:39 AM	**32** °F	**26** °F	**78** %	**WSW**	**0.0** mph	**1.0** mph	**30.41** in	**0.00** in	**0.00** in		w/m²
6:44 AM	**32** °F	**26** °F	**78** %	**WSW**	**1.0** mph	**1.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
6:49 AM	**32** °F	**26** °F	**79** %	**WSW**	**0.0** mph	**1.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
6:54 AM	**32** °F	**26** °F	**79** %	**WSW**	**1.0** mph	**1.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
6:59 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
7:04 AM	**32** °F	**26** °F	**79** %	**ESE**	**0.0** mph	**1.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:09 AM	**32** °F	**26** °F	**79** %	**SSE**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:14 AM	**32** °F	**27** °F	**80** %	**ESE**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:19 AM	**32** °F	**27** °F	**80** %	**West**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:24 AM	**32** °F	**27** °F	**80** %	**SSW**	**2.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:29 AM	**33** °F	**27** °F	**80** %	**South**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:34 AM	**33** °F	**27** °F	**80** %	**South**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:39 AM	**33** °F	**27** °F	**80** %	**East**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:44 AM	**33** °F	**27** °F	**80** %	**SSW**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:49 AM	**33** °F	**28** °F	**80** %	**South**	**1.0** mph	**2.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:54 AM	**33** °F	**28** °F	**80** %	**SW**	**2.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
7:59 AM	**33** °F	**28** °F	**79** %	**SW**	**1.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:04 AM	**34** °F	**28** °F	**79** %	**South**	**1.0** mph	**3.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:09 AM	**34** °F	**28** °F	**79** %	**NE**	**1.0** mph	**2.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:14 AM	**34** °F	**29** °F	**78** %	**South**	**2.0** mph	**3.0** mph	**30.43** in	**0.00** in	**0.00** in		w/m²
8:19 AM	**35** °F	**29** °F	**78** %	**SSW**	**2.0** mph	**4.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:24 AM	**35** °F	**29** °F	**77** %	**SSW**	**3.0** mph	**4.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:29 AM	**35** °F	**29** °F	**77** %	**SW**	**3.0** mph	**5.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:34 AM	**36** °F	**29** °F	**76** %	**SW**	**3.0** mph	**4.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:39 AM	**36** °F	**29** °F	**76** %	**SW**	**2.0** mph	**4.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:44 AM	**36** °F	**29** °F	**75** %	**SW**	**4.0** mph	**6.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:49 AM	**37** °F	**30** °F	**74** %	**SSW**	**4.0** mph	**5.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:54 AM	**37** °F	**30** °F	**74** %	**SW**	**3.0** mph	**4.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
8:59 AM	**38** °F	**30** °F	**73** %	**SW**	**2.0** mph	**5.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
9:04 AM	**38** °F	**30** °F	**72** %	**SSW**	**3.0** mph	**5.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
9:09 AM	**39** °F	**30** °F	**71** %	**WSW**	**4.0** mph	**5.0** mph	**30.42** in	**0.00** in	**0.00** in		w/m²
9:14 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
9:19 AM	39 °F	30 °F	70 %	SW	4.0 mph	5.0 mph	30.42 in	0.00 in	0.00 in		w/m²
9:24 AM	39 °F	30 °F	69 %	WSW	3.0 mph	4.0 mph	30.42 in	0.00 in	0.00 in		w/m²
9:29 AM	40 °F	30 °F	68 %	SW	3.0 mph	3.0 mph	30.42 in	0.00 in	0.00 in		w/m²
9:34 AM	40 °F	30 °F	67 %	SW	6.0 mph	7.0 mph	30.42 in	0.00 in	0.00 in		w/m²
9:39 AM	40 °F	30 °F	67 %	SSW	5.0 mph	8.0 mph	30.42 in	0.00 in	0.00 in		w/m²
9:44 AM	40 °F	30 °F	67 %	SW	4.0 mph	6.0 mph	30.42 in	0.00 in	0.00 in		w/m²
9:49 AM	40 °F	30 °F	67 %	SSW	6.0 mph	7.0 mph	30.41 in	0.00 in	0.00 in		w/m²
9:54 AM	41 °F	31 °F	67 %	SW	4.0 mph	7.0 mph	30.41 in	0.00 in	0.00 in		w/m²
9:59 AM	41 °F	31 °F	66 %	SW	6.0 mph	8.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:04 AM	41 °F	31 °F	66 %	SSW	6.0 mph	8.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:09 AM	42 °F	31 °F	65 %	SW	6.0 mph	7.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:14 AM	42 °F	31 °F	64 %	WSW	4.0 mph	8.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:19 AM	42 °F	31 °F	64 %	SSW	6.0 mph	7.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:24 AM	43 °F	31 °F	62 %	SW	5.0 mph	10.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:29 AM	43 °F	30 °F	61 %	SSW	6.0 mph	10.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:34 AM	43 °F	31 °F	61 %	SW	6.0 mph	9.0 mph	30.41 in	0.00 in	0.00 in		w/m²
10:39 AM	43 °F	31 °F	60 %	SSW	6.0 mph	7.0 mph	30.40 in	0.00 in	0.00 in		w/m²
10:44 AM	44 °F	31 °F	60 %	SW	6.0 mph	8.0 mph	30.40 in	0.00 in	0.00 in		w/m²
10:49 AM	44 °F	31 °F	59 %	SSW	6.0 mph	7.0 mph	30.40 in	0.00 in	0.00 in		w/m²
10:54 AM	45 °F	31 °F	59 %	SSW	6.0 mph	8.0 mph	30.40 in	0.00 in	0.00 in		w/m²
10:59 AM	46 °F	32 °F	58 %	SW	4.0 mph	7.0 mph	30.39 in	0.00 in	0.00 in		w/m²
11:04 AM	47 °F	33 °F	57 %	SSE	4.0 mph	8.0 mph	30.39 in	0.00 in	0.00 in		w/m²
11:09 AM	48 °F	32 °F	55 %	SW	6.0 mph	9.0 mph	30.39 in	0.00 in	0.00 in		w/m²
11:14 AM	48 °F	33 °F	55 %	SW	5.0 mph	7.0 mph	30.39 in	0.00 in	0.00 in		w/m²
11:19 AM	48 °F	33 °F	54 %	SSW	4.0 mph	8.0 mph	30.39 in	0.00 in	0.00 in		w/m²
11:24 AM	49 °F	33 °F	53 %	SW	4.0 mph	7.0 mph	30.39 in	0.00 in	0.00 in		w/m²
11:29 AM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
11:34 AM	50 °F	33 °F	52 %	SSW	4.0 mph	5.0 mph	30.38 in	0.00 in	0.00 in		w/m²
11:39 AM	50 °F	33 °F	51 %	SSW	7.0 mph	9.0 mph	30.38 in	0.00 in	0.00 in		w/m²
11:44 AM	50 °F	33 °F	51 %	SW	5.0 mph	9.0 mph	30.38 in	0.00 in	0.00 in		w/m²
11:49 AM	50 °F	33 °F	51 %	SSW	7.0 mph	9.0 mph	30.38 in	0.00 in	0.00 in		w/m²
11:54 AM	50 °F	32 °F	50 %	SW	6.0 mph	9.0 mph	30.38 in	0.00 in	0.00 in		w/m²
11:59 AM	51 °F	33 °F	49 %	SW	6.0 mph	10.0 mph	30.37 in	0.00 in	0.00 in		w/m²
12:04 PM	51 °F	33 °F	49 %	SSW	4.0 mph	7.0 mph	30.37 in	0.00 in	0.00 in		w/m²
12:09 PM	51 °F	33 °F	49 %	SW	4.0 mph	7.0 mph	30.37 in	0.00 in	0.00 in		w/m²
12:14 PM	52 °F	33 °F	48 %	SSW	4.0 mph	7.0 mph	30.37 in	0.00 in	0.00 in		w/m²
12:19 PM	53 °F	34 °F	48 %	SSE	3.0 mph	6.0 mph	30.37 in	0.00 in	0.00 in		w/m²
12:24 PM	53 °F	34 °F	47 %	West	4.0 mph	5.0 mph	30.36 in	0.00 in	0.00 in		w/m²
12:29 PM	53 °F	33 °F	46 %	SSW	4.0 mph	7.0 mph	30.36 in	0.00 in	0.00 in		w/m²
12:34 PM	55 °F	34 °F	45 %	SSW	5.0 mph	6.0 mph	30.35 in	0.00 in	0.00 in		w/m²
12:39 PM	55 °F	34 °F	44 %	South	5.0 mph	6.0 mph	30.35 in	0.00 in	0.00 in		w/m²
12:44 PM	55 °F	33 °F	43 %	SW	5.0 mph	7.0 mph	30.35 in	0.00 in	0.00 in		w/m²
12:49 PM	56 °F	33 °F	41 %	SW	4.0 mph	6.0 mph	30.35 in	0.00 in	0.00 in		w/m²
12:54 PM	57 °F	33 °F	40 %	SSW	4.0 mph	7.0 mph	30.34 in	0.00 in	0.00 in		w/m²
12:59 PM	57 °F	33 °F	41 %	WSW	5.0 mph	8.0 mph	30.34 in	0.00 in	0.00 in		w/m²
1:04 PM	56 °F	33 °F	40 %	SSW	6.0 mph	8.0 mph	30.34 in	0.00 in	0.00 in		w/m²
1:09 PM	57 °F	33 °F	40 %	SW	5.0 mph	7.0 mph	30.34 in	0.00 in	0.00 in		w/m²
1:14 PM	57 °F	33 °F	39 %	SW	6.0 mph	8.0 mph	30.34 in	0.00 in	0.00 in		w/m²
1:19 PM	58 °F	33 °F	39 %	SW	4.0 mph	7.0 mph	30.33 in	0.00 in	0.00 in		w/m²
1:24 PM	59 °F	34 °F	38 %	SW	4.0 mph	6.0 mph	30.33 in	0.00 in	0.00 in		w/m²
1:29 PM	59 °F	34 °F	38 %	SSW	4.0 mph	5.0 mph	30.33 in	0.00 in	0.00 in		w/m²
1:34 PM	59 °F	33 °F	37 %	SSW	6.0 mph	8.0 mph	30.33 in	0.00 in	0.00 in		w/m²
1:39 PM	58 °F	33 °F	37 %	SSW	7.0 mph	8.0 mph	30.32 in	0.00 in	0.00 in		w/m²
1:44 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
1:49 PM	**58** °F	**33** °F	**37** %	**SW**	**5.0** mph	**6.0** mph	**30.32** in	**0.00** in	**0.00** in		w/m²
1:54 PM	**60** °F	**34** °F	**37** %	**SSW**	**5.0** mph	**6.0** mph	**30.31** in	**0.00** in	**0.00** in		w/m²
1:59 PM	**59** °F	**34** °F	**38** %	**SW**	**4.0** mph	**6.0** mph	**30.31** in	**0.00** in	**0.00** in		w/m²
2:04 PM	**60** °F	**33** °F	**36** %	**SSW**	**5.0** mph	**9.0** mph	**30.31** in	**0.00** in	**0.00** in		w/m²
2:09 PM	**61** °F	**34** °F	**36** %	**SSE**	**5.0** mph	**6.0** mph	**30.30** in	**0.00** in	**0.00** in		w/m²
2:14 PM	**60** °F	**33** °F	**36** %	**SW**	**6.0** mph	**8.0** mph	**30.30** in	**0.00** in	**0.00** in		w/m²
2:19 PM	**60** °F	**33** °F	**35** %	**SW**	**6.0** mph	**8.0** mph	**30.30** in	**0.00** in	**0.00** in		w/m²
2:24 PM	**61** °F	**34** °F	**35** %	**SSW**	**4.0** mph	**8.0** mph	**30.29** in	**0.00** in	**0.00** in		w/m²
2:29 PM	**62** °F	**34** °F	**34** %	**SW**	**5.0** mph	**7.0** mph	**30.29** in	**0.00** in	**0.00** in		w/m²
2:34 PM	**62** °F	**33** °F	**34** %	**SW**	**4.0** mph	**6.0** mph	**30.29** in	**0.00** in	**0.00** in		w/m²
2:39 PM	**62** °F	**33** °F	**34** %	**SW**	**5.0** mph	**7.0** mph	**30.28** in	**0.00** in	**0.00** in		w/m²
2:44 PM	**61** °F	**33** °F	**34** %	**SSW**	**4.0** mph	**7.0** mph	**30.28** in	**0.00** in	**0.00** in		w/m²
2:49 PM	**62** °F	**34** °F	**34** %	**WSW**	**5.0** mph	**7.0** mph	**30.27** in	**0.00** in	**0.00** in		w/m²
2:54 PM	**62** °F	**34** °F	**35** %	**SW**	**5.0** mph	**8.0** mph	**30.27** in	**0.00** in	**0.00** in		w/m²
2:59 PM	**62** °F	**34** °F	**34** %	**SW**	**4.0** mph	**7.0** mph	**30.27** in	**0.00** in	**0.00** in		w/m²
3:04 PM	**61** °F	**34** °F	**35** %	**SSW**	**5.0** mph	**7.0** mph	**30.27** in	**0.00** in	**0.00** in		w/m²
3:09 PM	**60** °F	**32** °F	**34** %	**SW**	**5.0** mph	**7.0** mph	**30.27** in	**0.00** in	**0.00** in		w/m²
3:14 PM	**60** °F	**33** °F	**36** %	**SSW**	**4.0** mph	**7.0** mph	**30.26** in	**0.00** in	**0.00** in		w/m²
3:19 PM	**62** °F	**34** °F	**34** %	**SW**	**5.0** mph	**5.0** mph	**30.26** in	**0.00** in	**0.00** in		w/m²
3:24 PM	**63** °F	**34** °F	**34** %	**SSW**	**6.0** mph	**8.0** mph	**30.25** in	**0.00** in	**0.00** in		w/m²
3:29 PM	**63** °F	**34** °F	**34** %	**SSW**	**6.0** mph	**7.0** mph	**30.25** in	**0.00** in	**0.00** in		w/m²
3:34 PM	**64** °F	**34** °F	**33** %	**SW**	**7.0** mph	**9.0** mph	**30.25** in	**0.00** in	**0.00** in		w/m²
3:39 PM	**63** °F	**34** °F	**34** %	**SW**	**5.0** mph	**7.0** mph	**30.25** in	**0.00** in	**0.00** in		w/m²
3:44 PM	**64** °F	**35** °F	**33** %	**SSW**	**5.0** mph	**7.0** mph	**30.24** in	**0.00** in	**0.00** in		w/m²
3:49 PM	**66** °F	**35** °F	**32** %	**SW**	**4.0** mph	**5.0** mph	**30.24** in	**0.00** in	**0.00** in		w/m²
3:54 PM	**64** °F	**34** °F	**32** %	**WNW**	**4.0** mph	**7.0** mph	**30.23** in	**0.00** in	**0.00** in		w/m²
3:59 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
4:04 PM	**63** °F	**34** °F	**33** %	**SW**	**4.0** mph	**6.0** mph	**30.23** in	**0.00** in	**0.00** in		w/m²
4:09 PM	**64** °F	**34** °F	**33** %	**SW**	**4.0** mph	**6.0** mph	**30.23** in	**0.00** in	**0.00** in		w/m²
4:14 PM	**65** °F	**35** °F	**32** %	**SW**	**5.0** mph	**6.0** mph	**30.23** in	**0.00** in	**0.00** in		w/m²
4:19 PM	**66** °F	**35** °F	**31** %	**SW**	**5.0** mph	**8.0** mph	**30.22** in	**0.00** in	**0.00** in		w/m²
4:24 PM	**65** °F	**34** °F	**31** %	**SW**	**6.0** mph	**8.0** mph	**30.22** in	**0.00** in	**0.00** in		w/m²
4:29 PM	**63** °F	**33** °F	**32** %	**SSW**	**5.0** mph	**7.0** mph	**30.22** in	**0.00** in	**0.00** in		w/m²
4:34 PM	**64** °F	**34** °F	**32** %	**SW**	**6.0** mph	**8.0** mph	**30.22** in	**0.00** in	**0.00** in		w/m²
4:39 PM	**63** °F	**33** °F	**32** %	**SW**	**6.0** mph	**7.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
4:44 PM	**65** °F	**34** °F	**32** %	**SW**	**6.0** mph	**9.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
4:49 PM	**65** °F	**34** °F	**30** %	**SW**	**5.0** mph	**6.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
4:54 PM	**66** °F	**34** °F	**31** %	**SW**	**5.0** mph	**7.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
4:59 PM	**65** °F	**34** °F	**30** %	**SW**	**7.0** mph	**9.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
5:04 PM	**65** °F	**34** °F	**31** %	**SW**	**6.0** mph	**8.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:09 PM	**65** °F	**34** °F	**30** %	**SSW**	**5.0** mph	**8.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:14 PM	**65** °F	**33** °F	**30** %	**SW**	**6.0** mph	**8.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:19 PM	**65** °F	**34** °F	**30** %	**SSW**	**5.0** mph	**8.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:24 PM	**64** °F	**33** °F	**31** %	**SW**	**6.0** mph	**8.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:29 PM	**64** °F	**34** °F	**32** %	**SW**	**4.0** mph	**6.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:34 PM	**65** °F	**34** °F	**31** %	**SSW**	**5.0** mph	**6.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:39 PM	**63** °F	**33** °F	**32** %	**SW**	**5.0** mph	**7.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:44 PM	**64** °F	**34** °F	**33** %	**SW**	**4.0** mph	**5.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:49 PM	**64** °F	**34** °F	**32** %	**SW**	**5.0** mph	**6.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
5:54 PM	**64** °F	**34** °F	**33** %	**SW**	**4.0** mph	**8.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
5:59 PM	**63** °F	**34** °F	**34** %	**SSW**	**4.0** mph	**8.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
6:04 PM	**62** °F	**34** °F	**34** %	**SW**	**3.0** mph	**6.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
6:09 PM	**62** °F	**34** °F	**35** %	**SSW**	**4.0** mph	**5.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
6:14 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
6:19 PM	61 °F	34 °F	36 %	SSW	4.0 mph	6.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:24 PM	61 °F	34 °F	36 %	SW	5.0 mph	6.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:29 PM	60 °F	34 °F	37 %	SW	5.0 mph	7.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:34 PM	60 °F	34 °F	37 %	SSW	3.0 mph	5.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:39 PM	60 °F	34 °F	38 %	SSW	3.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:44 PM	59 °F	34 °F	38 %	SW	2.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:49 PM	59 °F	34 °F	38 %	SW	3.0 mph	5.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:54 PM	59 °F	34 °F	38 %	SSW	3.0 mph	5.0 mph	30.19 in	0.00 in	0.00 in		w/m²
6:57 PM	59 °F	34 °F	39 %	SW	3.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:01 PM	59 °F	34 °F	39 %	SSW	3.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:09 PM	58 °F	33 °F	39 %	SSW	4.0 mph	6.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:14 PM	58 °F	34 °F	39 %	SSW	2.0 mph	3.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:19 PM	58 °F	34 °F	40 %	SSW	3.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:24 PM	58 °F	34 °F	40 %	SSW	3.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:29 PM	58 °F	34 °F	40 %	SSW	2.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:34 PM	58 °F	34 °F	40 %	WSW	3.0 mph	4.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:39 PM	58 °F	34 °F	40 %	SW	3.0 mph	5.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:44 PM	58 °F	34 °F	40 %	ESE	2.0 mph	2.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:49 PM	58 °F	34 °F	41 %	ESE	2.0 mph	2.0 mph	30.19 in	0.00 in	0.00 in		w/m²
7:54 PM	58 °F	34 °F	41 %	SSE	2.0 mph	2.0 mph	30.20 in	0.00 in	0.00 in		w/m²
7:59 PM	57 °F	34 °F	41 %	SW	1.0 mph	3.0 mph	30.20 in	0.00 in	0.00 in		w/m²
8:04 PM	57 °F	33 °F	41 %	SW	1.0 mph	2.0 mph	30.20 in	0.00 in	0.00 in		w/m²
8:09 PM	57 °F	34 °F	41 %	SSW	2.0 mph	4.0 mph	30.20 in	0.00 in	0.00 in		w/m²
8:14 PM	56 °F	34 °F	42 %	NW	1.0 mph	3.0 mph	30.20 in	0.00 in	0.00 in		w/m²
8:19 PM	56 °F	33 °F	42 %	WSW	2.0 mph	2.0 mph	30.20 in	0.00 in	0.00 in		w/m²
8:24 PM	56 °F	34 °F	42 %	NW	2.0 mph	2.0 mph	30.20 in	0.00 in	0.00 in		w/m²
8:29 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
8:34 PM	**55** °F	**34** °F	**45** %	**NNE**	**2.0** mph	**3.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
8:39 PM	**55** °F	**35** °F	**46** %	**NNE**	**1.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
8:44 PM	**54** °F	**35** °F	**48** %	**NW**	**0.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
8:49 PM	**54** °F	**35** °F	**49** %	**NE**	**1.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
8:54 PM	**54** °F	**35** °F	**49** %	**NE**	**2.0** mph	**3.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
8:59 PM	**53** °F	**35** °F	**49** %	**NE**	**2.0** mph	**3.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:04 PM	**53** °F	**35** °F	**49** %	**WNW**	**1.0** mph	**3.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:09 PM	**53** °F	**35** °F	**49** %	**WNW**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:14 PM	**53** °F	**35** °F	**49** %	**SSE**	**2.0** mph	**3.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:19 PM	**53** °F	**34** °F	**49** %	**NNE**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:24 PM	**53** °F	**34** °F	**50** %	**ESE**	**1.0** mph	**3.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:29 PM	**52** °F	**35** °F	**50** %	**ESE**	**0.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:34 PM	**52** °F	**34** °F	**51** %	**ESE**	**1.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:39 PM	**52** °F	**35** °F	**51** %	**ENE**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:44 PM	**52** °F	**35** °F	**52** %	**NNE**	**1.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:49 PM	**52** °F	**35** °F	**52** %	**WNW**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:54 PM	**51** °F	**34** °F	**52** %	**West**	**2.0** mph	**3.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
9:59 PM	**51** °F	**35** °F	**52** %	**West**	**1.0** mph	**3.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
10:04 PM	**51** °F	**35** °F	**53** %	**NE**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:09 PM	**51** °F	**35** °F	**53** %	**NW**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:14 PM	**51** °F	**35** °F	**53** %	**NNE**	**1.0** mph	**2.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:19 PM	**51** °F	**35** °F	**53** %	**NW**	**1.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:24 PM	**51** °F	**35** °F	**53** %	**NNW**	**0.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:29 PM	**51** °F	**35** °F	**53** %	**North**	**0.0** mph	**0.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:34 PM	**51** °F	**34** °F	**53** %	**North**	**1.0** mph	**1.0** mph	**30.21** in	**0.00** in	**0.00** in		w/m²
10:39 PM	**51** °F	**34** °F	**53** %	**SW**	**1.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
10:44 PM											

Time	Temperature	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
10:49 PM	**51** °F	**34** °F	**52** %	**North**	**1.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
10:54 PM	**51** °F	**34** °F	**52** %	**SSW**	**1.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
10:59 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:04 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:09 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:14 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:19 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:24 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:29 PM	**50** °F	**33** °F	**52** %	**SW**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:34 PM	**50** °F	**33** °F	**51** %	**WSW**	**1.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:39 PM	**50** °F	**33** °F	**51** %	**SW**	**1.0** mph	**2.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:44 PM	**50** °F	**33** °F	**51** %	**East**	**0.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:49 PM	**50** °F	**33** °F	**51** %	**East**	**0.0** mph	**0.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:54 PM	**50** °F	**33** °F	**51** %	**East**	**1.0** mph	**1.0** mph	**30.20** in	**0.00** in	**0.00** in		w/m²
11:59 PM	**50** °F	**33** °F	**51** %	**SSW**	**2.0** mph	**4.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**50** %	**SSW**	**2.0** mph	**3.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	51 °F	**33** °F	**50** %	**East**	**0.0** mph	**2.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	51 °F	**33** °F	**50** %	**SE**	**1.0** mph	**2.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**50** %	**SSW**	**1.0** mph	**2.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**51** %	**SW**	**1.0** mph	**2.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**51** %	**South**	**1.0** mph	**2.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**51** %	**South**	**1.0** mph	**2.0** mph	**30.19** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**52** %	**South**	**1.0** mph	**1.0** mph	**30.18** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**52** %	**South**	**0.0** mph	**1.0** mph	**30.18** in	**0.00** in	**0.00** in		w/m²
	50 °F	**33** °F	**52** %	**South**	**0.0** mph	**1.0** mph	**30.18** in	**0.00** in	**0.00** in		w/m²

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Appendix B

TRAFFIC COUNT DATA

INTRODUCTION

Short-term Noise Measurements were collected during 15 concurrent 20-minute Traffic Monitoring Sessions (TMS) in which classified traffic counts were obtained. **Table B.1** lists in chronological order the traffic monitoring sessions conducted during this study and describes the interval time and duration of each session and the on-site weather conditions. Weather data was obtained from the nearest weather station in Hanover through the following internet links:

https://www.wunderground.com/dashboard/pws/KPAHANOV8/graph/2019-03-27/2019-03-27/daily

https://www.wunderground.com/dashboard/pws/KPAHANOV8/graph/2019-03-28/2019-03-28/daily

The dates and times of the sessions are listed below:

Table B.1 Traffic Monitoring Session Summary

Traffic Monitoring Session	Date	Interval	Duration	Temp (degree F)	Relative Humidity (%)	Wind Speed (mph)	Wind Direction[1]
TMS-1	03/27/2019	9:00am-9:20am	20-min	27	73	0	NNE
TMS-2	03/27/2019	9:40am-10:00am	20-min	32	55	0	NNE
TMS-3	03/27/2019	10:20am-10:40am	20-min	37	38	1	NNE
TMS-4	03/27/2019	11:00am-11:20am	20-min	40	38	1	W
TMS-5	03/27/2019	11:40am-12:00pm	20-min	46	30	1	WSW
TMS-6	03/27/2019	1:00pm-1:20pm	20-min	52	21	2	W
TMS-7	03/27/2019	1:50pm-2:10pm	20-min	55	20	2	SW
TMS-8	03/28/2019	9:00am-9:20am	20-min	38	73	2	SW
TMS-9	03/28/2019	9:40am-10:00am	20-min	40	67	5	SSW
TMS-10	03/28/2019	10:20am-10:40am	20-min	42	64	6	SSW
TMS-11	03/28/2019	11:00am-11:20am	20-min	46	58	4	SW
TMS-12	03/28/2019	11:40am-12:00pm	20-min	50	51	7	SSW
TMS-13	03/28/2019	1:00pm-1:20pm	20-min	57	41	5	WSW
TMS-14	03/28/2019	1:40pm-2:00pm	20-min	58	37	7	SSW
TMS-15	03/28/2019	2:20pm-2:40pm	20-min	59	38	4	SW

1. *Wind direction is defined as the direction the wind is blowing FROM. For example, if the Wind Direction is North, then the wind is blowing FROM the North and to the South.*

The traffic monitoring session volume summaries are shown in the tables below. The volumes shown were counted during the 20-minute interval and have been multiplied by a factor of 3 to compute vehicles per hour (vph). The speed shown represents the average tested speed. The speed data was collected using a radar gun in miles per hour (mph).

Automobiles are defined as vehicles with two axles and four wheels. Medium trucks are defined as vehicles with two axles and six wheels. Heavy trucks are defined as vehicles having three or more axles.

Eisenhower Drive Extension Project Traffic Count Summary

Wednesday March 27, 2019

Traffic Monitoring Session No. 1 **9:00 AM to 9:20 AM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)	Total (VPH)	% Trucks
SR 116 Hanover Rd EB	234	9	9	3	0	34	255	8%
SR 116 Hanover Rd WB	213	12	9	0	0	34	234	9%
Sunday Drive NB	24	0	0	0	0	28	24	0%
Sunday Drive SB	57	0	3	0	0	28	60	5%
Water Drive NB	3	0	0	0	0	20	3	0%
Water Drive SB	3	0	0	0	0	20	3	0%

Traffic Monitoring Session No. 2 **9:40 AM to 10:00 AM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)	Total (VPH)	% Trucks
SR 116 Hanover Rd EB	243	12	12	3	0	42	270	10%
SR 116 Hanover Rd WB	213	0	6	3	0	42	222	4%
Sunday Drive NB	27	0	0	0	0	29	27	0%
Sunday Drive SB	21	0	0	0	0	29	21	0%
St. Michaels Way EB	6	0	0	0	0	20	6	0%
St. Michaels Way WB	6	0	0	0	0	20	6	0%

Traffic Monitoring Session No. 3 **10:20 AM to 10:40 AM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)	Total (VPH)	% Trucks
SR 116 Hanover Rd EB	285	9	15	0	0	37	309	8%
SR 116 Hanover Rd WB	270	12	3	0	0	37	285	5%
Sunday Drive NB	27	0	0	0	0	30	27	0%
Sunday Drive SB	24	0	0	0	0	30	24	0%
Wheat Drive EB	0	0	0	0	0	25	0	0%
Wheat Drive WB	9	0	0	0	0	25	9	0%

Traffic Monitoring Session No. 4 **11:00 AM to 11:20 AM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)	Total (VPH)	% Trucks
Centennial Road EB	96	3	3	0	0	43	102	6%
Centennial Road WB	111	0	0	0	0	43	111	0%
Sunday Drive NB	36	6	0	0	0	33	42	14%
Sunday Drive SB	33	0	0	0	0	33	33	0%
Barley Circle NB	3	0	0	0	0	25	3	0%
Barley Circle SB	3	0	0	0	0	25	3	0%

Traffic Monitoring Session No. 5 **11:40 AM to 12:00 PM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)	Total (VPH)	% Trucks
Centennial Road EB	108	0	0	0	0	42	108	0%
Centennial Road WB	84	6	0	0	0	43	90	7%
Sunday Drive NB	45	0	0	0	0	33	45	0%
Sunday Drive SB	24	0	0	0	0	33	24	0%
Barley Circle NB	6	0	0	0	0	25	6	0%
Barley Circle SB	9	3	0	0	0	25	12	25%

Traffic Monitoring Session No. 6 **1:00 PM to 1:20 PM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)	Total (VPH)	% Trucks
Centennial Road EB	90	0	0	0	0	45	90	0%
Centennial Road WB	126	3	3	0	0	45	132	5%
Sunday Drive NB	36	0	3	0	0	35	39	8%
Sunday Drive SB	30	6	0	0	0	35	36	17%
Chapel Rd NEB	81	3	6	0	0	40	90	10%
Chapel Rd SWB	84	6	21	0	0	40	111	24%

Traffic Monitoring Session No. 7 **1:50 PM to 2:10 PM**

Roadway	Cars (VPH)	Medium Trucks (VPH)	Heavy Trucks (VPH)	Buses (VPH)	Motorcycles (VPH)	Speed (MPH)
Centennial Road EB	84	3	3	0	0	44
Centennial Road WB	102	0	6	3	0	47
Church St NB	51	0	3	0	0	37
Church St SB	66	3	6	0	0	36
Conewago Drive EB	18	0	0	0	0	18
Conewago Drive WB	15	0	0	0	0	18

Total (VPH)	% Trucks
90	7%
111	8%
54	6%
75	12%
18	0%
15	0%

Automobiles defined as vehicles with two axles and four wheels.
Medium trucks defined as vehicles with two axles and six wheels.
Heavy trucks defined as vehicles having three or more axles.

Eisenhower Extension Traffic Count Summary

Thursday March 28, 2019

Traffic Monitoring Session No. 8 **9:00 AM to 9:20 AM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
Edgegrove Rd EB	11	2	1	0	0	36
Edgegrove Rd WB	10	3	0	0	0	36
Church St NB	8	0	1	0	0	40
Church St SB	13	0	1	0	0	40
Conewago Dr EB	7	0	0	0	0	25
Conewago Dr WB	4	0	0	0	0	25

Traffic Monitoring Session No. 9 **9:40 AM to 10:00 AM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
Oxford Ave NB	42	4	1	0	0	43
Oxford Ave SB	47	7	2	0	0	43
Church St NB	9	0	1	0	0	39
Church St SB	18	1	2	0	0	39
Johathon Dr EB	0	0	0	0	0	25
Johathon Dr WB	2	0	0	0	0	25

Traffic Monitoring Session No. 10 **10:20 AM to 10:40 AM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
Oxford Ave NB	33	6	1	0	0	35
Oxford Ave SB	43	6	4	0	0	37
Church St NB	14	0	2	0	0	42
Church St SB	11	0	1	0	0	42
Johathon Dr EB	2	0	0	0	0	25
Johathon Dr WB	1	0	0	0	0	25

Traffic Monitoring Session No. 11 **11:00 AM to 11:20 AM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
Oxford Ave NB	38	8	2	0	0	41
Oxford Ave SB	42	5	0	0	0	44
Kindig Ln EB	26	2	4	0	0	34
Kindig Ln WB	39	0	10	0	0	34
Edgegrove Rd EB	14	0	3	0	0	36
Edgegrove Rd WB	13	0	5	0	0	36

Traffic Monitoring Session No. 12 **11:40 AM to 12:00 PM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
Oxford Ave NB	41	16	2	0	0	38
Oxford Ave SB	47	9	1	0	0	33
Kindig Ln EB	24	1	6	0	0	42
Kindig Ln WB	57	0	8	0	0	42
Edgegrove Rd EB	17	1	5	0	0	42
Edgegrove Rd WB	16	1	4	0	0	42

Traffic Monitoring Session No. 13 **1:00 PM to 1:20 PM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
High St NB (S of Radio Rd)	162	5	7	1	0	27
High St SB (S of Radio Rd)	115	6	5	4	0	30
Radio Rd EB	14	0	1	0	0	26
Radio Rd WB	19	0	0	0	0	26
High St NB	120	2	9	2	0	27
High St SB	158	3	9	1	0	30

Traffic Monitoring Session No. 14 **1:40 PM to 2:00 PM**

Roadway	Cars (20 min)	Medium Trucks (20 min)	Heavy Trucks (20 min)	Buses (20 min)	Motorcycles (20 min)	Speed (MPH)
Eisenhower Dr EB	142	9	1	1	0	25
Eisenhower Dr WB	112	6	3	0	0	25
High St NB (N of Eisenhower)	14	0	1	0	0	20

High St SB (N of Eisenhower)	30	3	1	0	0	20
Wetzel Dr EB	16	0	0	0	0	31
Wetzel Dr WB	27	2	0	0	0	31

Traffic Monitoring Session No. 15 **2:20 PM to 2:40 PM**

Automobiles defined as vehicles with two axles and four wheels.	**Cars (20 min)**	**Medium Trucks (20 min)**	**Heavy Trucks (20 min)**	**Buses (20 min)**	**Motorcycles (20 min)**	**Speed (MPH)**
Eisenhower Dr EB	126	5	6	0	0	25
Eisenhower Dr WB	122	7	2	1	0	25
High St NB (N of Eisenhower)	12	0	0	0	0	20
High St SB (N of Eisenhower)	37	0	2	0	0	20
Wetzel Dr EB	13	0	1	0	0	31
Wetzel Dr WB	40	0	3	0	0	31
High St NB (N of Eisenhower)	130	3	9	1	0	20
High St SB (N of Eisenhower)	130	3	9	1	0	20
Radio Rd EB	17	1	0	0	0	26
Radio Rd WB	17	1	0	0	0	26

Automobiles defined as vehicles with two axles and four wheels.
Medium trucks defined as vehicles with two axles and six wheels.
Heavy trucks defined as vehicles having three or more axles.

Appendix C

TNM VALIDATION RESULTS

INTRODUCTION

The TNM Model Validation determines the effectiveness of the Noise Barrier Design by evaluating the model's ability to reproduce the Measured Noise Levels. Measured Noise Levels correspond to ambient measurements taken in conjunction with highway traffic counts.

TNM MODEL VALIDATION

After the Noise Measurements and Traffic Counts were obtained, an original TNM Model was developed for the study area. Each Noise Measurement Receptor was accurately represented in the model by a TNM Receptor. The model was then calibrated by testing it under each of the traffic conditions encountered during the traffic monitoring sessions. PennDOT considers a TNM Model to be properly calibrated when the Modeled Noise Levels are within 3 dB(A) of the Measured Noise Levels for the receptors. To bring the model into validation, modifications were applied by inputting additional terrain and structural elements in an orderly sequence.

Twenty out of twenty-nine modeling locations measured noise levels are within 3 dB(A) of the modeled TNM 2.5 noise levels. The remaining nine receivers are not applicable for validation, as Per Pub 24 Section 2.5.3 Model Validation Limitations:

> “These procedures are not applicable in situations where the existing acoustical environment is not dominated by an existing highway traffic noise source. The FHWA TNM is not capable of accurately determining existing noise levels where highway traffic noise is not the dominant contributing acoustical characteristic.”

Table C.1 compares the Measured Noise Levels to the Modeled Noise Levels from the TNM Runs.

Table C.1 **TNM Validation Results**

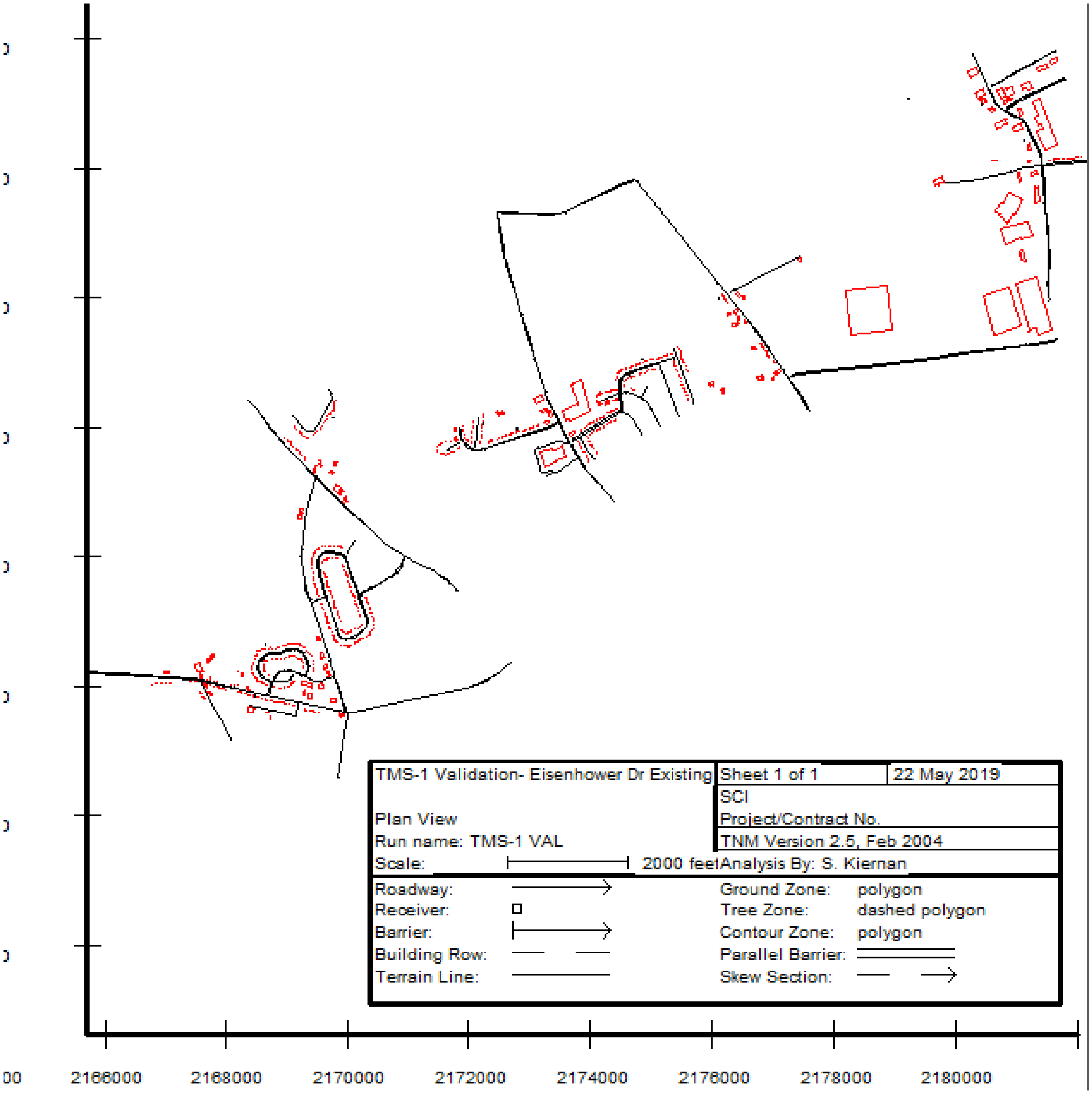
Traffic Monitoring Session	Receptor Number	Residence Address or Property Description		Measured Noise Level[1]	Modeled Noise Level[1]	Difference[1]
TMS01	M-1-1	5585	Hanover Rd	64	61.9	-2.1
TMS01	M-2-1	5430	Hanover Rd	65	62.5	-2.5
TMS02	M-3-1	5530	Hanover Rd	45	43.5	-1.5
TMS02	M-3-2	110	St Michaels Way	42	39.6	-2.4
TMS03	M-3-3	161	St Michaels Way	41	39.3	-1.7
TMS05	M-4-1	310	Sunday Dr	50	52.6	2.6
TMS03	M-5-1	318	Barley Circle	48	45.1	-2.9
TMS04	M-5-2	58	Barley Circle	49	48.8	-0.2
TMS04	M-5-3	89	Barley Circle	38	39.4	1.4
TMS05	M-6-1	3426	Centennial Rd	66	63.6	-2.4
TMS06	M-7-1	3326	Centennial Rd	66	63.3	-2.7
TMS06	M-7-2	271	Friendly Drive	35	35.9	0.9
TMS07	M-8-1	5	Tiffany Ct	39	31	**-8**
TMS07	M-8-2	7	Sease Dr	45	32.2	**-12.8**
TMS08	M-8-3	69	Conewago Dr	46	34.8	**-11.2**
TMS09	M-9-1	28	Franklin Ct	41	31.8	**-9**
TMS09	M-9-2	246	Johnathon Dr	39	39.9	0.9
TMS10	M-9-3	279	Johnathon Dr	39	34.3	**-4.7**
TMS10	M-9-4	502	Providence Dr	43	36.8	**-6.2**
TMS12	M-9-5	182	Oxford Ave	51	50	-1
TMS08	M-10-1	509	Church St	61	59.7	-1.3
TMS11	M-10-2	310	Oxford Ave	54	51.8	-2.2
TMS11	M-11-1	303	Oxford Ave	65	62.4	-2.6
TMS12	M-11-2	305	Oxford Ave	48	36.9	**-11.1**
TMS14	M-11-3		Dentist	54	40.3	**-13.7**
TMS13	M-12-1		Utz Soccer Fields	47	34.5	**-12.5**
TMS13	M-12-2		Menonite School	58	55.7	-2.3
TMS15	M-13-1	83	Radio Rd	60	57.7	-2.3
TMS15	M-14-1		Super 8 Motel	54	51.7	-2.3

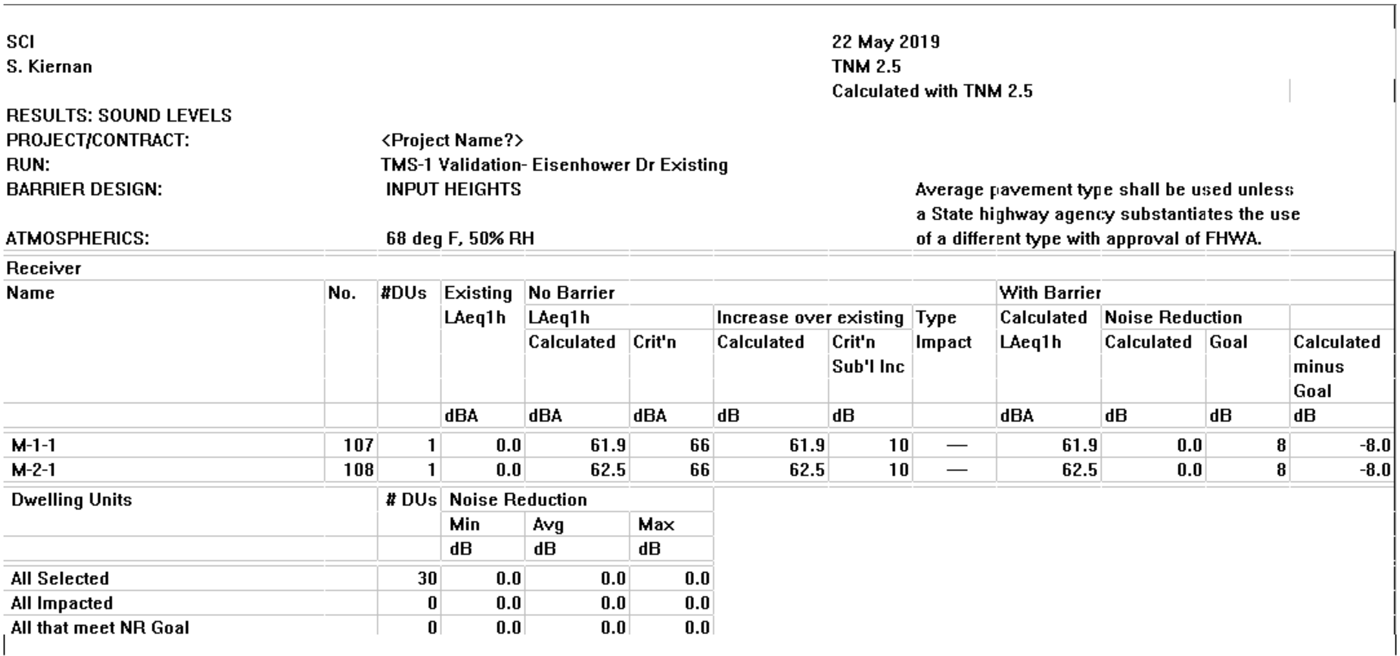
Notes:

1. Noise values, comparisons, and insertion losses are calculated to the tenth of a dB(A) and then rounded for presentation purposes.

Below are the TNM noise results output tables for the Eisenhower Drive Extension validation runs.

Eisenhower Drive Extension Model Results:





SCI
S. Kiernan

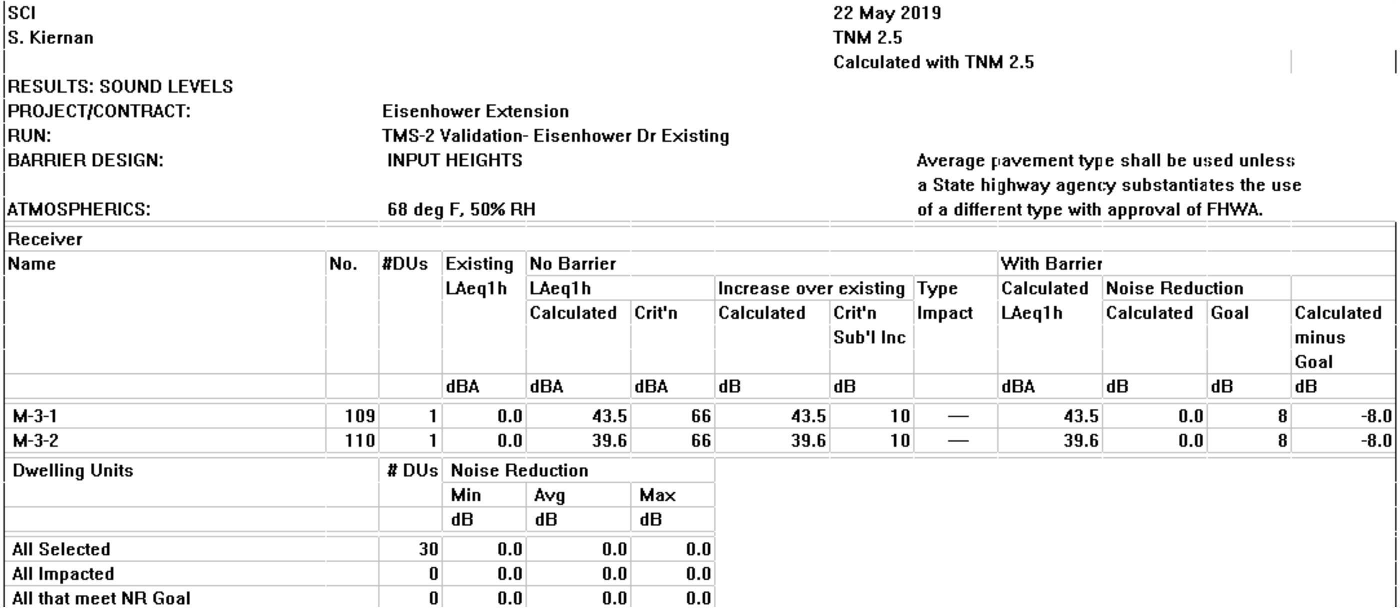
22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: TMS-1 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-1-1	107	1	0.0	61.9	66	61.9	10	—	61.9	0.0	8	-8.0
M-2-1	108	1	0.0	62.5	66	62.5	10	—	62.5	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension
RUN: TMS-2 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-3-1	109	1	0.0	43.5	66	43.5	10	—	43.5	0.0	8	-8.0
M-3-2	110	1	0.0	39.6	66	39.6	10	—	39.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension
RUN: TMS-3 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver

Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-3-3	111	1	0.0	39.3	66	39.3	10	—	39.3	0.0	8	-8.0
M-5-1	114	1	0.0	45.1	66	45.1	10	—	45.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension
RUN: TMS-4 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver

Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-5-2	115	1	0.0	48.8	66	48.8	10	—	48.8	0.0	8	-8.0
M-5-3	116	1	0.0	39.4	66	39.4	10	—	39.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-5 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-4-1	113	1	0.0	52.6	66	52.6	10	—	52.6	0.0	8	-8.0
M-6-1	117	1	0.0	63.6	66	63.6	10	—	63.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-6 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-7-1	118	1	0.0	63.3	66	63.3	10	—	63.3	0.0	8	-8.0
M-7-2	119	1	0.0	35.9	66	35.9	10	—	35.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-7 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-8-1	120	1	0.0	31.0	66	31.0	10	—	31.0	0.0	8	-8.0
M-8-2	121	1	0.0	32.2	66	32.2	10	—	32.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI
S. Kiernan

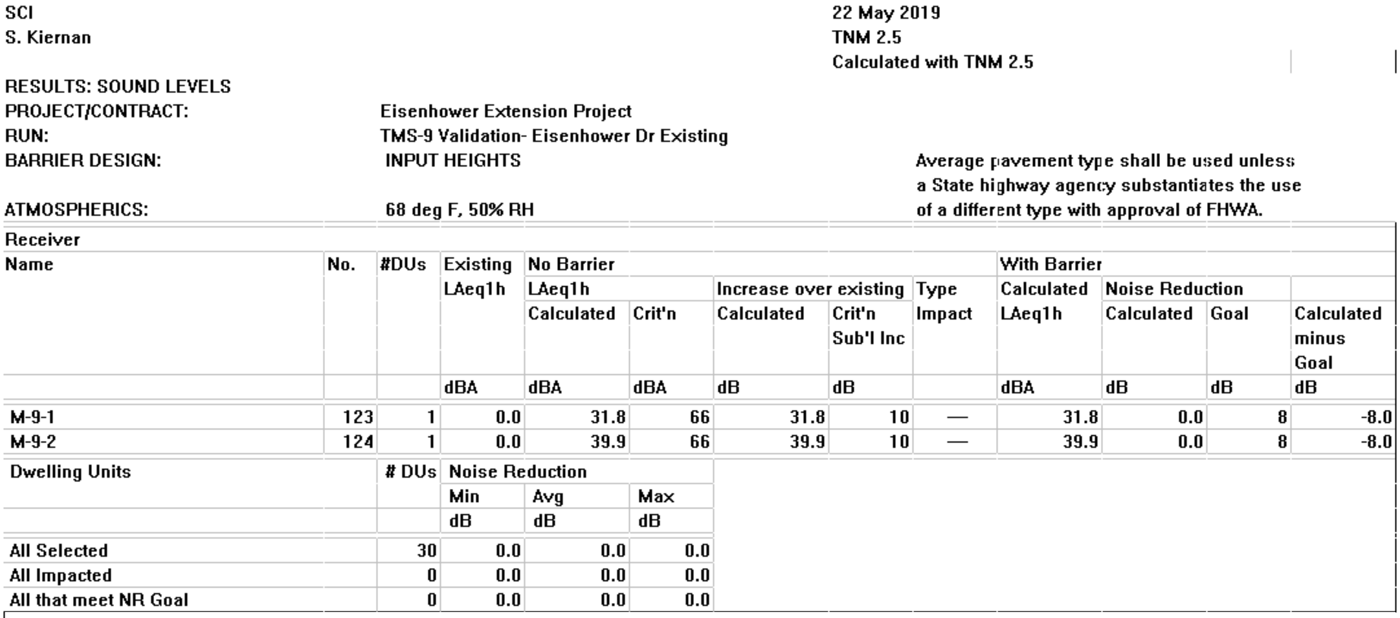
22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-8 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-8-3	122	1	0.0	34.8	66	34.8	10	—	34.8	0.0	8	-8.0
M-10-1	128	1	0.0	59.7	66	59.7	10	—	59.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

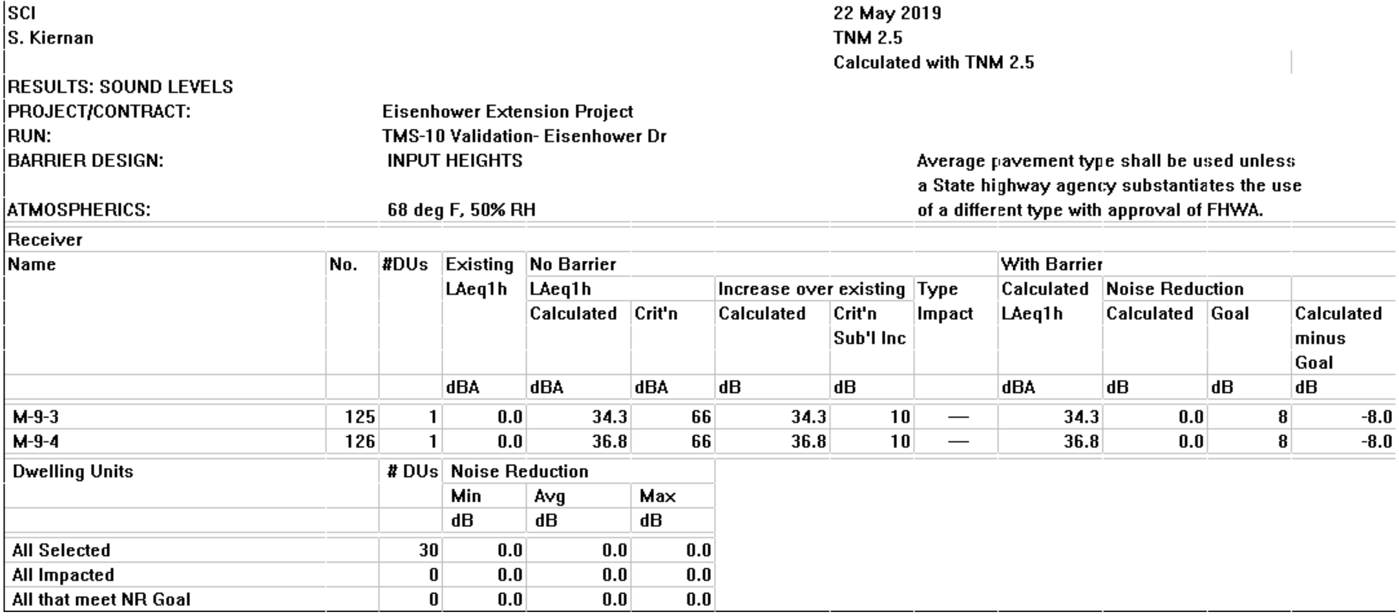
22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-9 Validation- Eisenhower Dr Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-9-1	123	1	0.0	31.8	66	31.8	10	—	31.8	0.0	8	-8.0
M-9-2	124	1	0.0	39.9	66	39.9	10	—	39.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

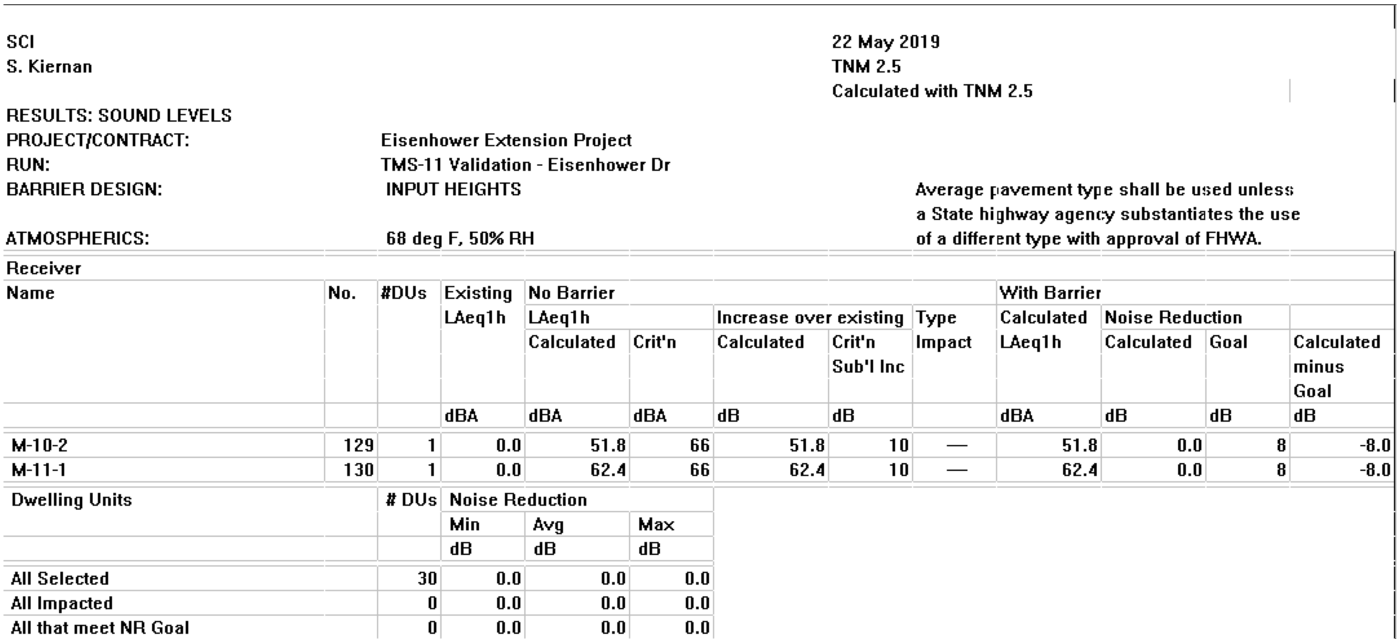
22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-10 Validation- Eisenhower Dr
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-9-3	125	1	0.0	34.3	66	34.3	10	—	34.3	0.0	8	-8.0
M-9-4	126	1	0.0	36.8	66	36.8	10	—	36.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

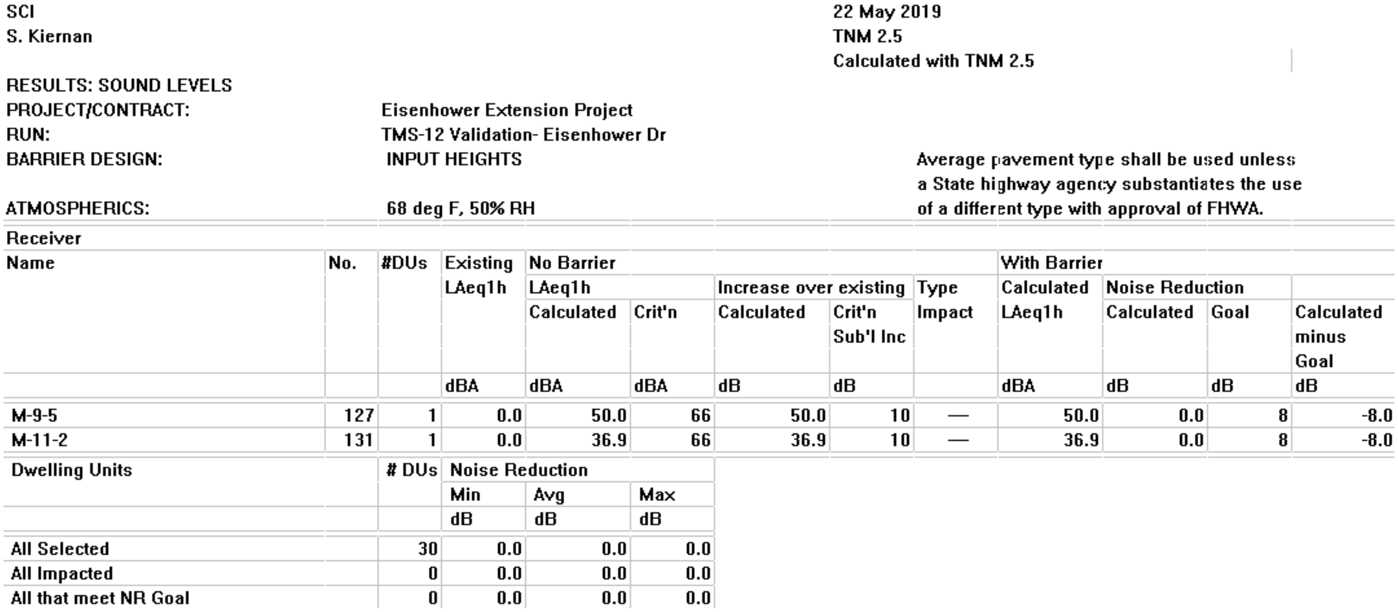
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-11 Validation - Eisenhower Dr
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver

Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-10-2	129	1	0.0	51.8	66	51.8	10	—	51.8	0.0	8	-8.0
M-11-1	130	1	0.0	62.4	66	62.4	10	—	62.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

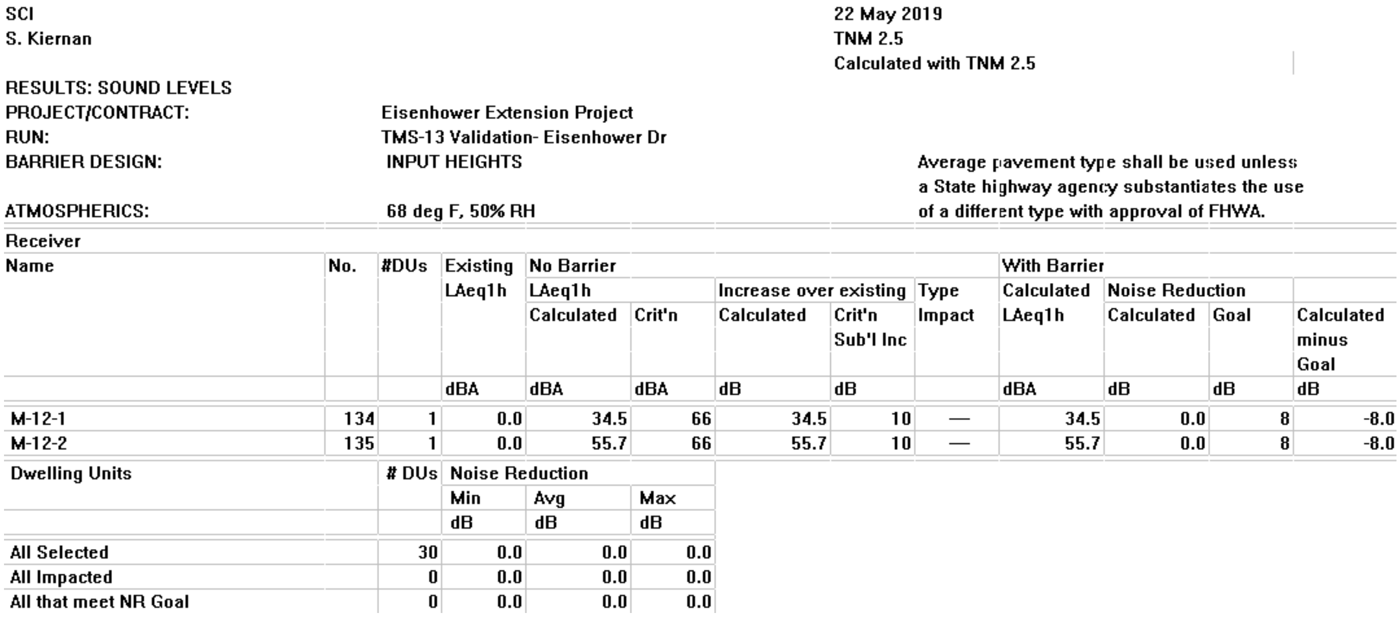
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-12 Validation- Eisenhower Dr
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver

Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-9-5	127	1	0.0	50.0	66	50.0	10	—	50.0	0.0	8	-8.0
M-11-2	131	1	0.0	36.9	66	36.9	10	—	36.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

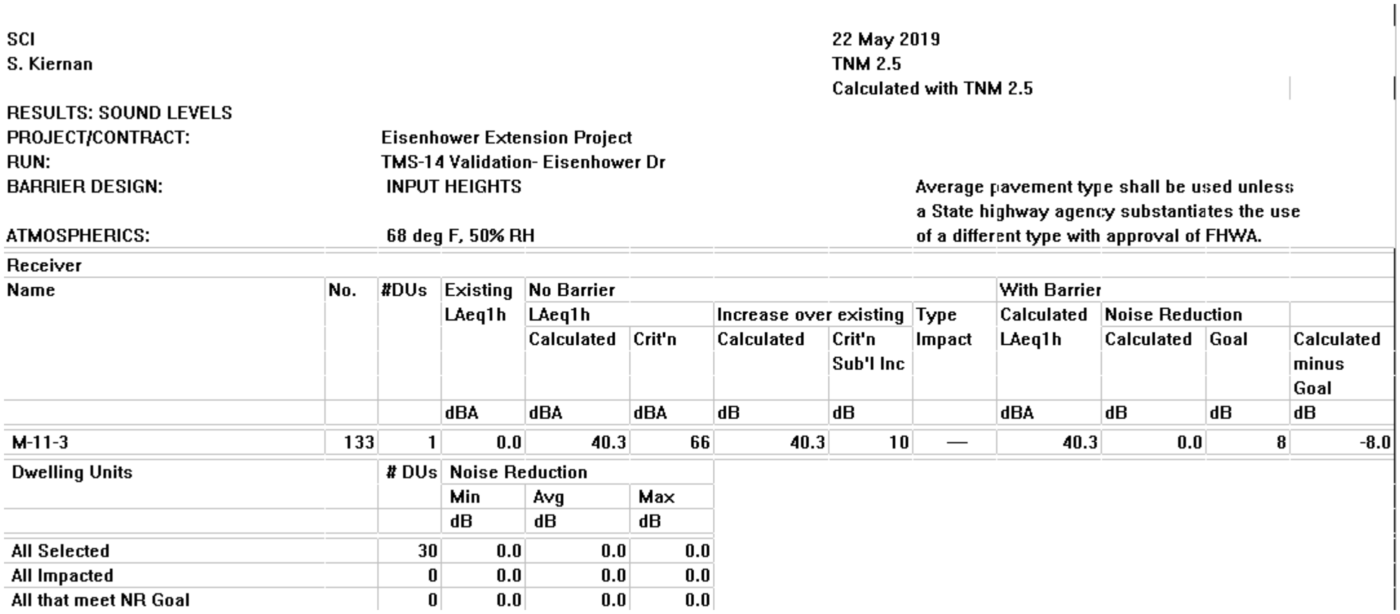
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-13 Validation- Eisenhower Dr
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-12-1	134	1	0.0	34.5	66	34.5	10	—	34.5	0.0	8	-8.0
M-12-2	135	1	0.0	55.7	66	55.7	10	—	55.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Extension Project
RUN: TMS-14 Validation- Eisenhower Dr
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-11-3	133	1	0.0	40.3	66	40.3	10	—	40.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

SCI	**22 May 2019**
S. Kiernan	**TNM 2.5**
	Calculated with TNM 2.5

RESULTS: SOUND LEVELS		
PROJECT/CONTRACT:	**Eisenhower Extension Project**	
RUN:	**TMS- Validation- Eisenhower Dr**	
BARRIER DESIGN:	**INPUT HEIGHTS**	**Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.**
ATMOSPHERICS:	**68 deg F, 50% RH**	

Receiver

Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-13-1	137	1	0.0	57.7	66	57.7	10	—	57.7	0.0	8	-8.0
M-14-1	138	1	0.0	51.7	66	51.7	10	—	51.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	30	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix D

NOISE ANALYSIS TRAFFIC

INTRODUCTION

JMT conducted manual turning movement counts (TMC) within the study area in October 2015. TMCs were performed at each study area intersection during the morning and evening peak hour time periods. Additionally, automatic traffic recorder (ATR) counts collected daily traffic volumes at key locations within the network and recorded data for a continuous 72-hours. This existing traffic count data was reviewed, adjusted, and balanced for each corridor to determine the existing worst-case morning and evening peak hour traffic volumes at each study area intersection.

To develop worst case 2042 future traffic volumes, a growth rate was determined utilizing the York County Planning Commission (YCPC) 2010 Base and 2040 No Build travel demand models. The growth rate and growth factor for the study area are:

- Growth Rate: 0.76% (annually)
- Growth Factor: 1.21% (2015-2042)

This growth rate was applied to the existing traffic volumes collected as part of this project to determine the worst-case Design Year 2042 Transportation Systems Management (TSM) Alternative traffic volumes. Utilizing the travel time study results, the origin-destination study data, and engineering judgement the No Build traffic volumes were reassigned to the off-alignment alternative (Alt 5C) for the Design Year 2042 scenario.

The Year 2015 (Existing Worst-Case) and Year 2042 Build vehicle fleet breakout percentages (cars, motorcycles, medium trucks and heavy trucks) were determined from the ATR counts conducted in 2015. The posted speed limits were utilized to be conservative in the screening modeling process. The roadway service volumes were developed based upon the methodologies presented in the Highway Capacity Manual (HCM), 6th Edition.

The Predicted Traffic summary spreadsheets for each analysis scenario provided by JMT are included in the following pages.

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Morning Peak Hour

		SR 0116 EB						SR 0116 WB					
		Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)
	Predicted Volumes	353	460	620	625	555	405	410	405	475	485	433	285
	LOS 'D/E' Analysis Result**	740	790	580	580	580	580	740	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	45	30	30	30	30	50	45	30	30	30	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		353	460	580	580	555	405	410	405	475	485	433	285
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	325.7	425.0	535.9	535.9	512.8	374.2	378.8	374.2	438.9	448.1	399.6	263.3
	Medium Trucks	15.1	19.7	24.8	24.8	23.7	17.3	17.5	17.3	20.3	20.7	18.5	12.2
	Heavy Trucks	6.5	8.5	10.7	10.7	10.3	7.5	7.6	7.5	8.8	9.0	8.0	5.3
	Buses	3.1	4.0	5.1	5.1	4.9	3.5	3.6	3.5	4.2	4.2	3.8	2.5
	Motorcycles	2.1	2.8	3.5	3.5	3.3	2.4	2.5	2.4	2.9	2.9	2.6	1.7
based on ave. % for all TMS													
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	326	425	536	536	513	374	379	374	439	448	400	263
	Motorcycles	2	3	3	3	3	2	2	2	3	3	3	2
USE THESE VOLUMES	TOTAL	353	460	580	580	555	405	410	405	475	485	433	285
	Cars	326	425	536	536	513	374	379	374	439	448	400	263
	Medium Trucks	15	20	25	25	24	17	18	17	20	21	19	12
	Heavy Trucks	7	8	11	11	10	7	8	7	9	9	8	5
	Buses	3	4	5	5	5	5	3	5	4	4	3	3
	Motorcycles	2	3	3	3	3	2	2	2	3	3	3	2
	Speed	45.0	40.0	10.0	10.0	25.0	25.0	45.0	40.0	25.0	25.0	25.0	25.0

		SR 2008 EB				SR 2008 WB				SR 3098		SR 0094 NB			
		Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	99	270	323	465	75	210	218	290	290	225	410	438	438	555
	LOS 'D/E' Analysis Result**	790	790	580	580	790	790	580	580	580	580	580	580	1220	1220
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Design Speed	40	45	40	40	40	45	40	40	40	40	40	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		99	270	323	465	75	210	218	290	290	225	410	438	438	555
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	90.0	246.8	294.8	425.0	68.6	192.0	198.8	265.1	270.8	210.1	374.8	399.9	399.9	507.3
	Medium Trucks	4.8	13.2	15.8	22.7	3.7	10.3	10.6	14.2	10.6	8.3	20.0	21.4	21.4	27.1
	Heavy Trucks	2.1	5.7	6.8	9.8	1.6	4.4	4.6	6.1	4.6	3.6	8.7	9.2	9.2	11.7
	Buses	1.0	2.7	3.2	4.7	0.8	2.1	2.2	2.9	2.2	1.7	4.1	4.4	4.4	5.6
	Motorcycles	0.6	1.6	1.9	2.8	0.4	1.2	1.3	1.7	1.8	1.4	2.4	2.6	2.6	3.3
based on ave. % for all TMS															
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	90	247	295	425	69	192	199	265	271	210	375	400	400	507
	Motorcycles	1	2	2	3	0	1	1	2	2	1	2	3	3	3
USE THESE VOLUMES	TOTAL	99	270	323	465	75	210	218	290	290	225	410	438	438	555
	Cars	90	247	295	425	69	192	199	265	271	210	375	400	400	507
	Medium Trucks	5	13	16	23	4	10	11	14	11	8	20	21	21	27
	Heavy Trucks	2	6	7	10	2	4	5	6	5	4	9	9	9	12
	Buses	1	2	3	4	0	3	2	3	1	2	4	5	5	6
	Motorcycles	1	2	2	3	0	1	1	2	2	1	2	3	3	3
	Speed	35.0	40.0	35.0	35.0	35.0	40.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Morning Peak Hour

		SR 0094 SB				High St NB				High St SB			
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	375	433	433	635	245	440	495	100	110	185	308	80
	LOS 'D/E' Analysis Result**	580	580	1220	1220	580	580	580	580	580	580	580	580
	# of lanes	1	1	2	2	1	1	1	1	1	1	1	1
	Design Speed	40	40	40	40	30	40	40	40	30	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		375	433	433	635	245	440	495	100	110	185	308	80
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	342.8	395.3	395.3	580.4	236.1	424.0	477.0	96.4	106.0	178.3	296.3	77.1
	Medium Trucks	18.3	21.1	21.1	31.0	4.5	8.1	9.1	1.8	2.0	3.4	5.6	1.5
	Heavy Trucks	7.9	9.1	9.1	13.4	1.9	3.5	3.9	0.8	0.9	1.5	2.4	0.6
	Buses	3.8	4.3	4.3	6.4	0.9	1.7	1.9	0.4	0.4	0.7	1.2	0.3
	Motorcycles	2.2	2.6	2.6	3.8	1.5	2.8	3.1	0.6	0.7	1.2	1.9	0.5
based on ave. % for all TMS													
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	343	395	395	580	236	424	477	96	106	178	296	77
	Motorcycles	2	3	3	4	2	3	3	1	1	1	2	1
USE THESE VOLUMES	TOTAL	375	433	433	635	245	440	495	100	110	185	308	80
	Cars	343	395	395	580	236	424	477	96	106	178	296	77
	Medium Trucks	18	21	21	31	4	8	9	2	2	3	6	1
	Heavy Trucks	8	9	9	13	2	3	4	1	1	1	2	1
	Buses	4	5	5	7	1	2	2	0	0	2	2	0
	Motorcycles	2	3	3	4	2	3	3	1	1	1	2	1
	Speed	35.0	35.0	35.0	35.0	25.0	35.0	35.0	35.0	25.0	35.0	35.0	35.0

		Kindig Ln		SR 2011		SR 2006				Sunday Dr		Eisenhower Dr	
		EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	178	168	85	68	200	160	185	115	79	93	338	255
	LOS 'D/E' Analysis Result**	580	580	790	790	790	790	790	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	40	40	45	45	50	50	50	50	40	40	30	30
	Truck %	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		178	168	85	68	200	160	185	115	79	93	338	255
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%	92.4%	92.4%
	Medium Trucks	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%	4.3%	4.3%
	Heavy Trucks	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%	1.8%	1.8%
	Buses	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	160.5	151.4	77.7	61.7	182.8	146.2	169.1	105.1	76.9	90.1	311.8	235.6
	Medium Trucks	9.8	9.2	4.2	3.3	9.8	7.8	9.0	5.6	1.0	1.1	14.4	10.9
	Heavy Trucks	4.2	4.0	1.8	1.4	4.2	3.4	3.9	2.4	0.4	0.5	6.2	4.7
	Buses	2.0	1.9	0.9	0.7	2.0	1.6	1.9	1.2	0.2	0.2	3.0	2.2
	Motorcycles	1.0	1.0	0.5	0.4	1.2	1.0	1.1	0.7	0.5	0.6	2.0	1.5
based on ave. % for all TMS													
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	160	151	78	62	183	146	169	105	77	90	312	236
	Motorcycles	1	1	1	0	1	1	1	1	1	1	2	2
USE THESE VOLUMES	TOTAL	178	168	85	68	200	160	185	115	79	93	338	255
	Cars	160	151	78	62	183	146	169	105	77	90	312	236
	Medium Trucks	10	9	4	3	10	8	9	6	1	1	14	11
	Heavy Trucks	4	4	2	1	4	3	4	2	0	0	6	5
	Buses	3	3	0	2	2	2	2	1	0	1	4	1
	Motorcycles	1	1	1	0	1	1	1	1	1	1	2	2
	Speed	35.0	35.0	40.0	40.0	45.0	45.0	45.0	45.0	35.0	35.0	25.0	25.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Evening Peak Hour

		SR 0116 EB						SR 0116 WB					
		Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)
	Predicted Volumes	503	575	740	705	600	445	445	543	695	705	690	385
	LOS 'D/E' Analysis Result**	740	790	580	580	580	580	740	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	45	30	30	30	30	50	45	30	30	30	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.
		503	575	580	580	580	445	445	543	580	580	580	385
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	464.3	531.3	535.9	535.9	535.9	411.2	411.2	501.3	535.9	535.9	535.9	355.7
	Medium Trucks	21.5	24.6	24.8	24.8	24.8	19.0	19.0	23.2	24.8	24.8	24.8	16.5
	Heavy Trucks	9.3	10.6	10.7	10.7	10.7	8.2	8.2	10.0	10.7	10.7	10.7	7.1
	Buses	4.4	5.0	5.1	5.1	5.1	3.9	3.9	4.7	5.1	5.1	5.1	3.4
	Motorcycles	3.0	3.5	3.5	3.5	3.5	2.7	2.7	3.3	3.5	3.5	3.5	2.3
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	464	531	536	536	536	411	411	501	536	536	536	356
	Motorcycles	3	3	3	3	3	3	3	3	3	3	3	2
USE THESE VOLUMES	**TOTAL**	503	575	580	580	580	445	445	543	580	580	580	385
	Cars	464	531	536	536	536	411	411	501	536	536	536	356
	Medium Trucks	21	25	25	25	25	19	19	23	25	25	25	16
	Heavy Trucks	9	11	11	11	11	8	8	10	11	11	11	7
	Buses	6	5	5	5	5	4	4	6	5	5	5	4
	Motorcycles	3	3	3	3	3	3	3	3	3	3	3	2
	Speed	45.0	40.0	10.0	10.0	10.0	25.0	45.0	40.0	10.0	10.0	10.0	25.0

		SR 2008 EB				SR 2008 WB				SR 3098		SR 0094 NB			
		Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	95	235	390	563	110	327	275	578	385	420	565	665	665	910
	LOS 'D/E' Analysis Result**	790	790	580	580	790	790	580	580	580	580	580	580	1220	1220
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Design Speed	40	45	40	40	40	45	40	40	40	40	40	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.
		95	235	390	563	110	327	275	578	385	420	565	580	665	910
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	86.8	214.8	356.5	514.2	100.5	298.4	251.4	527.9	359.6	392.2	516.4	530.2	607.8	831.8
	Medium Trucks	4.6	11.5	19.1	27.5	5.4	16.0	13.4	28.2	14.1	15.4	27.6	28.4	32.5	44.5
	Heavy Trucks	2.0	5.0	8.2	11.9	2.3	6.9	5.8	12.2	6.1	6.7	11.9	12.2	14.0	19.2
	Buses	1.0	2.4	3.9	5.6	1.1	3.3	2.8	5.8	2.9	3.2	5.7	5.8	6.7	9.1
	Motorcycles	0.6	1.4	2.3	3.3	0.7	1.9	1.6	3.4	2.3	2.6	3.4	3.5	4.0	5.4
based on ave. % for all TMS															
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	87	215	356	514	101	298	251	528	360	392	516	530	608	832
	Motorcycles	1	1	2	3	1	2	2	3	2	3	3	3	4	5
USE THESE VOLUMES	**TOTAL**	95	235	390	563	110	327	275	578	385	420	565	580	665	910
	Cars	87	215	356	514	101	298	251	528	360	392	516	530	608	832
	Medium Trucks	5	11	19	28	5	16	13	28	14	15	28	28	33	44
	Heavy Trucks	2	5	8	12	2	7	6	12	6	7	12	12	14	19
	Buses	0	3	5	6	1	4	3	7	3	3	6	7	6	10
	Motorcycles	1	1	2	3	1	2	2	3	2	3	3	3	4	5
	Speed	35.0	40.0	35.0	35.0	35.0	40.0	35.0	35.0	35.0	35.0	35.0	14.0	35.0	35.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2015 - Existing PM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Evening Peak Hour

		SR 0094 SB				High St NB				High St SB			
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	670	720	720	790	290	535	593	80	175	325	535	185
	LOS 'D/E' Analysis Result**	580	580	1220	1220	580	580	580	580	580	580	580	580
	# of lanes	1	1	2	2	1	1	1	1	1	1	1	1
	Design Speed	40	40	40	40	30	40	40	40	30	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
	Notes	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.
		580	580	720	790	290	535	580	80	175	325	535	185
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	530.2	530.2	658.1	722.1	279.5	515.6	559.0	77.1	168.7	313.2	515.6	178.3
	Medium Trucks	28.4	28.4	35.2	38.6	5.3	9.8	10.6	1.5	3.2	6.0	9.8	3.4
	Heavy Trucks	12.2	12.2	15.2	16.7	2.3	4.2	4.6	0.6	1.4	2.6	4.2	1.5
	Buses	5.8	5.8	7.2	7.9	1.1	2.0	2.2	0.3	0.7	1.2	2.0	0.7
	Motorcycles	3.5	3.5	4.3	4.7	1.8	3.4	3.6	0.5	1.1	2.0	3.4	1.2
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	530	530	658	722	279	516	559	77	169	313	516	178
	Motorcycles	3	3	4	5	2	3	4	1	1	2	3	1
USE THESE VOLUMES	**TOTAL**	580	580	720	790	290	535	580	80	175	325	535	185
	Cars	530	530	658	722	279	516	559	77	169	313	516	178
	Medium Trucks	28	28	35	39	5	10	11	1	3	6	10	3
	Heavy Trucks	12	12	15	17	2	4	5	1	1	3	4	1
	Buses	7	7	8	7	2	2	1	0	1	1	2	2
	Motorcycles	3	3	4	5	2	3	4	1	1	2	3	1
	Speed	14.0	14.0	35.0	35.0	25.0	35.0	14.0	35.0	25.0	35.0	35.0	35.0

		Kindig Ln		SR 2011		SR 2006				Sunday Dr		Eisenhower Dr	
		EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	163	353	95	93	235	220	228	185	98	65	550	370
	LOS 'D/E' Analysis Result**	580	580	790	790	790	790	790	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	40	40	45	45	50	50	50	50	40	40	30	30
	Truck %	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		163	353	95	93	235	220	228	185	98	65	550	370
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%	92.4%	92.4%
	Medium Trucks	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%	4.3%	4.3%
	Heavy Trucks	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%	1.8%	1.8%
	Buses	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	146.9	318.7	86.8	84.5	214.8	201.1	207.9	169.1	94.9	63.3	508.2	341.9
	Medium Trucks	8.9	19.4	4.6	4.5	11.5	10.8	11.1	9.0	1.2	0.8	23.5	15.8
	Heavy Trucks	3.9	8.4	2.0	2.0	5.0	4.6	4.8	3.9	0.5	0.3	10.2	6.8
	Buses	1.8	4.0	1.0	0.9	2.4	2.2	2.3	1.9	0.2	0.2	4.8	3.2
	Motorcycles	1.0	2.1	0.6	0.6	1.4	1.3	1.4	1.1	0.6	0.4	3.3	2.2
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	147	319	87	85	215	201	208	169	95	63	508	342
	Motorcycles	1	2	1	1	1	1	1	1	1	0	3	2
USE THESE VOLUMES	**TOTAL**	163	353	95	93	235	220	228	185	98	65	550	370
	Cars	147	319	87	85	215	201	208	169	95	63	508	342
	Medium Trucks	9	19	5	5	11	11	11	9	1	1	24	16
	Heavy Trucks	4	8	2	2	5	5	5	4	1	0	10	7
	Buses	2	5	0	-1	3	2	3	2	-1	1	5	3
	Motorcycles	1	2	1	1	1	1	1	1	1	0	3	2
	Speed	35.0	35.0	40.0	40.0	45.0	45.0	45.0	45.0	35.0	35.0	25.0	25.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2015 - Existing PM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Alternative 4/5 (2042)

Morning Peak Hour

		SR 0116 EB						
		Geiselman Rd (T478) to Eisenhower Dr Ext	Eisenhower Dr Ext to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)
	Predicted Volumes	445	296	340	447	475	370	500
	LOS 'D/E' Analysis Result**	740	740	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1
	Design Speed	50	50	45	30	30	30	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		445	296	340	447	475	370	500
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	411.2	273.5	314.2	413.0	438.4	341.9	462.0
	Medium Trucks	19.0	12.7	14.5	19.1	20.3	15.8	21.4
	Heavy Trucks	8.2	5.5	6.3	8.3	8.8	6.8	9.2
	Buses	3.9	2.6	3.0	3.9	4.2	3.2	4.4
	Motorcycles	2.7	1.8	2.0	2.7	2.9	2.2	3.0
based on ave. % for all TMS								
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No
	Cars	411	274	314	413	438	342	462
	Motorcycles	3	2	2	3	3	2	3
USE THESE VOLUMES	TOTAL	445	296	340	447	475	370	500
	Cars	411	274	314	413	438	342	462
	Medium Trucks	19	13	15	19	20	16	21
	Heavy Trucks	8	5	6	8	9	7	9
	Buses	4	2	3	4	5	3	5
	Motorcycles	3	2	2	3	3	2	3
	Speed	45.0	45.0	40.0	25.0	25.0	25.0	25.0

		SR 0116 WB						
		Geiselman Rd (T478) to Eisenhower Dr Ext	Eisenhower Dr Ext to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)
	Predicted Volumes	513	445	396	429	460	382	355
	LOS 'D/E' Analysis Result**	740	740	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1
	Design Speed	50	50	45	30	30	30	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		513	445	396	429	460	382	355
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	473.5	410.7	365.9	396.4	425.0	352.5	328.0
	Medium Trucks	21.9	19.0	16.9	18.4	19.7	16.3	15.2
	Heavy Trucks	9.5	8.2	7.3	7.9	8.5	7.0	6.6
	Buses	4.5	3.9	3.5	3.8	4.0	3.3	3.1
	Motorcycles	3.1	2.7	2.4	2.6	2.8	2.3	2.1
based on ave. % for all TMS								
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No
	Cars	474	411	366	396	425	353	328
	Motorcycles	3	3	2	3	3	2	2
USE THESE VOLUMES	TOTAL	513	445	396	429	460	382	355
	Cars	474	411	366	396	425	353	328
	Medium Trucks	22	19	17	18	20	16	15
	Heavy Trucks	9	8	7	8	8	7	7
	Buses	5	4	4	4	4	4	3
	Motorcycles	3	3	2	3	3	2	2
	Speed	45.0	45.0	40.0	25.0	25.0	25.0	25.0

		SR 2008 EB				
		Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Eisenhower Dr Ext	Eisenhower Dr Ext to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)
	Predicted Volumes	125	330	399	462	399
	LOS 'D/E' Analysis Result**	790	790	790	580	580
	# of lanes	1	1	1	1	1
	Design Speed	40	45	45	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.
		125	330	399	462	399
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	114.3	301.6	364.7	421.8	364.7
	Medium Trucks	6.1	16.1	19.5	22.6	19.5
	Heavy Trucks	2.6	7.0	8.4	9.7	8.4
	Buses	1.3	3.3	4.0	4.6	4.0
	Motorcycles	0.7	2.0	2.4	2.7	2.4
based on ave. % for all TMS						
Motor-cycles?	Check motorcycles?	No	No	No	No	No
	Cars	114	302	365	422	365
	Motorcycles	1	2	2	3	2
USE THESE VOLUMES	TOTAL	125	330	399	462	399
	Cars	114	302	365	422	365
	Medium Trucks	6	16	20	23	20
	Heavy Trucks	3	7	8	10	8
	Buses	1	3	4	4	4
	Motorcycles	1	2	2	3	2
	Speed	35.0	40.0	40.0	35.0	35.0

		SR 2008 WB				
		Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Eisenhower Dr Ext	Eisenhower Dr Ext to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)
	Predicted Volumes	100	260	348	299	277
	LOS 'D/E' Analysis Result**	790	790	790	580	580
	# of lanes	1	1	1	1	1
	Design Speed	40	45	45	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.
		100	260	348	299	277
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	91.4	237.7	318.1	273.3	252.7
	Medium Trucks	4.9	12.7	17.0	14.6	13.5
	Heavy Trucks	2.1	5.5	7.3	6.3	5.8
	Buses	1.0	2.6	3.5	3.0	2.8
	Motorcycles	0.6	1.5	2.1	1.8	1.6
based on ave. % for all TMS						
Motor-cycles?	Check motorcycles?	No	No	No	No	No
	Cars	91	238	318	273	253
	Motorcycles	1	2	2	2	2
USE THESE VOLUMES	TOTAL	100	260	348	299	277
	Cars	91	238	318	273	253
	Medium Trucks	5	13	17	15	14
	Heavy Trucks	2	5	7	6	6
	Buses	1	2	4	3	2
	Motorcycles	1	2	2	2	2
	Speed	35.0	40.0	40.0	35.0	35.0

		SR 3098	
		EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	360	278
	LOS 'D/E' Analysis Result**	580	580
	# of lanes	1	1
	Design Speed	40	40
	Truck %	6.0%	6.0%
	Notes	PRED.	PRED.
		360	278
Truck Percentage Breakout	Cars	92.2%	92.2%
	Medium Trucks	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%
	Buses	0.9%	0.9%
	Motorcycles	0.6%	0.6%
	% Check	ok	ok
Percentage Broken Out	Cars	93.4%	93.4%
	Medium Trucks	3.7%	3.7%
	Heavy Trucks	1.6%	1.6%
	Buses	0.8%	0.8%
	Motorcycles	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	336.2	259.2
	Medium Trucks	13.2	10.2
	Heavy Trucks	5.7	4.4
	Buses	2.7	2.1
	Motorcycles	2.2	1.7
based on ave. % for all TMS			
Motor-cycles?	Check motorcycles?	No	No
	Cars	336	259
	Motorcycles	2	2
USE THESE VOLUMES	TOTAL	360	278
	Cars	336	259
	Medium Trucks	13	10
	Heavy Trucks	6	4
	Buses	3	3
	Motorcycles	2	2
	Speed	35.0	35.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Alternative 4/5 (2042)

Morning Peak Hour

		SR 0094 NB				SR 0094 SB			
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	282	317	317	685	263	336	336	775
	LOS 'D/E' Analysis Result**	580	580	1220	1220	580	580	1220	1220
	# of lanes	1	1	2	2	1	1	2	2
	Design Speed	40	40	40	40	40	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		282	317	317	685	263	336	336	775
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	257.8	289.8	289.8	626.1	240.4	306.7	306.7	708.4
	Medium Trucks	13.8	15.5	15.5	33.5	12.9	16.4	16.4	37.9
	Heavy Trucks	6.0	6.7	6.7	14.5	5.6	7.1	7.1	16.4
	Buses	2.8	3.2	3.2	6.9	2.6	3.4	3.4	7.8
	Motorcycles	1.7	1.9	1.9	4.1	1.6	2.0	2.0	4.6
based on ave. % for all TMS									
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No
	Cars	258	290	290	626	240	307	307	708
	Motorcycles	2	2	2	4	2	2	2	5
USE THESE VOLUMES	**TOTAL**	282	317	317	685	263	336	336	775
	Cars	258	290	290	626	240	307	307	708
	Medium Trucks	14	15	15	33	13	16	16	38
	Heavy Trucks	6	7	7	14	6	7	7	16
	Buses	2	3	3	8	2	4	4	8
	Motorcycles	2	2	2	4	2	2	2	5
	Speed	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0

		High St NB				High St SB			
		Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	305	421	329	105	140	176	282	85
	LOS 'D/E' Analysis Result**	580	580	580	580	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1
	Design Speed	30	40	40	40	30	40	40	40
	Truck %	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		305	421	329	105	140	176	282	85
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%
	Medium Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Heavy Trucks	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
	Buses	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	293.9	405.2	316.6	101.2	134.9	169.6	271.3	81.9
	Medium Trucks	5.6	7.7	6.0	1.9	2.6	3.2	5.2	1.6
	Heavy Trucks	2.4	3.3	2.6	0.8	1.1	1.4	2.2	0.7
	Buses	1.1	1.6	1.2	0.4	0.5	0.7	1.1	0.3
	Motorcycles	1.9	2.6	2.1	0.7	0.9	1.1	1.8	0.5
based on ave. % for all TMS									
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No
	Cars	294	405	317	101	135	170	271	82
	Motorcycles	2	3	2	1	1	1	2	1
USE THESE VOLUMES	**TOTAL**	305	421	329	105	140	176	282	85
	Cars	294	405	317	101	135	170	271	82
	Medium Trucks	6	8	6	2	3	3	5	2
	Heavy Trucks	2	3	3	1	1	1	2	1
	Buses	1	2	1	0	0	1	2	-1
	Motorcycles	2	3	2	1	1	1	2	1
	Speed	25.0	35.0	35.0	35.0	25.0	35.0	35.0	35.0

		Kindig Ln		SR 2011				SR 2006				Sunday Dr	
		EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Eisenhower Dr Ext	NB: Eisenhower Dr Ext to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Eisenhower Dr Ext	SB: Eisenhower Dr Ext to Edgegrove Rd (SR 2008)	EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)
	Predicted Volumes	74	142	141	114	128	89	250	115	230	96	370	312
	LOS 'D/E' Analysis Result**	580	580	790	790	790	790	790	790	790	790	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	40	40	45	45	45	45	50	50	50	50	40	40
	Truck %	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		74	142	141	114	128	89	250	115	230	96	370	312
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%
	Medium Trucks	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%
	Heavy Trucks	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%
	Buses	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	66.5	128.4	128.4	104.2	116.5	81.4	228.5	104.7	210.2	87.7	359.8	303.3
	Medium Trucks	4.0	7.8	6.9	5.6	6.2	4.4	12.2	5.6	11.2	4.7	4.5	3.8
	Heavy Trucks	1.7	3.4	3.0	2.4	2.7	1.9	5.3	2.4	4.9	2.0	2.0	1.6
	Buses	0.8	1.6	1.4	1.1	1.3	0.9	2.5	1.1	2.3	1.0	0.9	0.8
	Motorcycles	0.4	0.8	0.8	0.7	0.8	0.5	1.5	0.7	1.4	0.6	2.3	2.0
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	66	128	128	104	117	81	229	105	210	88	360	303
	Motorcycles	0	1	1	1	1	1	1	1	1	1	2	2
USE THESE VOLUMES	**TOTAL**	74	142	141	114	128	89	250	115	230	96	370	312
	Cars	66	128	128	104	117	81	229	105	210	88	360	303
	Medium Trucks	4	8	7	6	6	4	12	6	11	5	5	4
	Heavy Trucks	2	3	3	2	3	2	5	2	5	2	2	2
	Buses	2	2	2	1	1	1	3	1	3	0	1	1
	Motorcycles	0	1	1	1	1	1	1	1	1	1	2	2
	Speed	35.0	35.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	35.0	35.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - Alt4_5 AM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Alternative 4/5 (2042)

Morning Peak Hour

		Eisenhower Dr/Alternative EB						Eisenhower Dr/Alternative WB					
		Hanover Rd (SR 0116) to Sunday Drive (T460)	Sunday Dr (T460) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St (SR 2011)	Church St (SR 2011) to Oxford Ave (SR 2008)	Oxford Ave (SR 2008) to High Street (T535/Boro)	High St (T535/Boro) to Carlisle St (SR 0094)	Hanover Rd (SR 0116) to Sunday Drive (T460)	Sunday Dr (T460) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St (SR 2011)	Church St (SR 2011) to Oxford Ave (SR 2008)	Oxford Ave (SR 2008) to High Street (T535/Boro)	High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	139	504	489	528	540	638	63	370	307	348	341	515
	LOS 'D/E' Analysis Result**	740	740	740	740	740	580	740	740	740	740	740	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	50	50	50	50	30	50	50	50	50	50	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		139	504	489	528	540	580	63	370	307	348	341	515
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	128.4	465.2	451.8	487.9	499.0	535.9	58.2	341.4	283.2	321.5	315.1	475.4
	Medium Trucks	5.9	21.5	20.9	22.6	23.1	24.8	2.7	15.8	13.1	14.9	14.6	22.0
	Heavy Trucks	2.6	9.3	9.0	9.8	10.0	10.7	1.2	6.8	5.7	6.4	6.3	9.5
	Buses	1.2	4.4	4.3	4.6	4.7	5.1	0.6	3.2	2.7	3.0	3.0	4.5
	Motorcycles	0.8	3.0	2.9	3.2	3.2	3.5	0.4	2.2	1.8	2.1	2.1	3.1
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	128	465	452	488	499	536	58	341	283	322	315	475
	Motorcycles	1	3	3	3	3	3	0	2	2	2	2	3
USE THESE VOLUMES	**TOTAL**	139	504	489	528	540	580	63	370	307	348	341	515
	Cars	128	465	452	488	499	536	58	341	283	322	315	475
	Medium Trucks	6	22	21	23	23	25	3	16	13	15	15	22
	Heavy Trucks	3	9	9	10	10	11	1	7	6	6	6	10
	Buses	1	5	4	4	5	5	1	4	3	3	3	5
	Motorcycles	1	3	3	3	3	3	0	2	2	2	2	3
	Speed	45.0	45.0	45.0	45.0	45.0	10.0	45.0	45.0	45.0	45.0	45.0	25.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - Alt4_5 AM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Alternative 4/5 (2042)

Evening Peak Hour

		SR 0116 EB							SR 0116 WB							SR 2008 EB					SR 2008 WB					SR 3098	
		Geiselman Rd (T478) to Eisenhower Dr Ext	Eisenhower Dr Ext to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Eisenhower Dr Ext	Eisenhower Dr Ext to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Eisenhower Dr Ext	Eisenhower Dr Ext to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Eisenhower Dr Ext	Eisenhower Dr Ext to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	623	537	552	665	647	498	545	557	341	338	417	450	414	475	120	290	401	460	561	138	403	529	383	477	475	515
	LOS 'D/E' Analysis Result**	740	740	790	580	580	580	580	740	740	790	580	580	580	580	790	790	790	580	580	790	790	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	50	45	30	30	30	30	50	50	45	30	30	30	30	40	45	45	40	40	40	45	45	40	40	40	40
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%
	Notes	PRED.	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		623	537	552	580	580	498	545	557	341	338	417	450	414	475	120	290	401	460	561	138	403	529	383	477	475	515
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	575.2	495.7	510.0	535.9	535.9	459.7	503.6	514.2	315.1	311.8	385.3	415.8	382.5	438.9	109.7	265.1	366.5	420.5	512.8	125.7	367.9	483.1	349.6	436.0	443.6	481.0
	Medium Trucks	26.6	23.0	23.6	24.8	24.8	21.3	23.3	23.8	14.6	14.4	17.8	19.3	17.7	20.3	5.9	14.2	19.6	22.5	27.4	6.7	19.7	25.8	18.7	23.3	17.4	18.9
	Heavy Trucks	11.5	9.9	10.2	10.7	10.7	9.2	10.1	10.3	6.3	6.2	7.7	8.3	7.6	8.8	2.5	6.1	8.5	9.7	11.8	2.9	8.5	11.2	8.1	10.1	7.5	8.2
	Buses	5.4	4.7	4.8	5.1	5.1	4.4	4.8	4.9	3.0	3.0	3.6	3.9	3.6	4.2	1.2	2.9	4.0	4.6	5.6	1.4	4.0	5.3	3.8	4.8	3.6	3.9
	Motorcycles	3.7	3.2	3.3	3.5	3.5	3.0	3.3	3.3	2.1	2.0	2.5	2.7	2.5	2.9	0.7	1.7	2.4	2.7	3.3	0.8	2.4	3.1	2.3	2.8	2.9	3.1
based on ave. % for all TMS																											
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	575	496	510	536	536	460	504	514	315	312	385	416	383	439	110	265	367	420	513	126	368	483	350	436	444	481
	Motorcycles	4	3	3	3	3	3	3	3	2	2	3	3	2	3	1	2	2	3	3	1	2	3	2	3	3	3
USE THESE VOLUMES	**TOTAL**	623	537	552	580	580	498	545	557	341	338	417	450	414	475	120	290	401	460	561	138	403	529	383	477	475	515
	Cars	575	496	510	536	536	460	504	514	315	312	385	416	383	439	110	265	367	420	513	126	368	483	350	436	444	481
	Medium Trucks	27	23	24	25	25	21	23	24	15	14	18	19	18	20	6	14	20	22	27	7	20	26	19	23	17	19
	Heavy Trucks	11	10	10	11	11	9	10	10	6	6	8	8	8	9	3	6	8	10	12	3	8	11	8	10	8	8
	Buses	6	5	5	5	5	5	5	6	3	4	3	4	3	4	0	3	4	5	6	1	5	6	4	5	3	4
	Motorcycles	4	3	3	3	3	3	3	3	2	2	3	3	2	3	1	2	2	3	3	1	2	3	2	3	3	3
	Speed	45.0	45.0	40.0	10.0	10.0	25.0	25.0	45.0	45.0	40.0	25.0	25.0	25.0	25.0	35.0	40.0	40.0	35.0	35.0	35.0	40.0	40.0	35.0	35.0	35.0	35.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - Alt4_5 PM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Alternative 4/5 (2042)

Evening Peak Hour

		SR 0094 NB				SR 0094 SB				High St NB			
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	472	595	595	1,115	623	683	683	965	365	569	555	85
	LOS 'D/E' Analysis Result**	580	580	1220	1220	580	580	1220	1220	580	580	580	580
	# of lanes	1	1	2	2	1	1	2	2	1	1	1	1
	Design Speed	40	40	40	40	40	40	40	40	30	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%
	Notes	PRED.	LOS 'D/E'	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		472	580	595	1115	580	580	683	965	365	569	555	85
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	431.4	530.2	543.4	1019.2	530.2	530.2	624.3	882.1	351.8	548.4	534.9	81.9
	Medium Trucks	23.1	28.4	29.1	54.5	28.4	28.4	33.4	47.2	6.7	10.4	10.2	1.6
	Heavy Trucks	10.0	12.2	12.6	23.5	12.2	12.2	14.4	20.4	2.9	4.5	4.4	0.7
	Buses	4.7	5.8	5.9	11.2	5.8	5.8	6.8	9.7	1.4	2.1	2.1	0.3
	Motorcycles	2.8	3.5	3.5	6.6	3.5	3.5	4.1	5.7	2.3	3.6	3.5	0.5
based on ave. % for all TMS													
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	431	530	543	1019	530	530	624	882	352	548	535	82
	Motorcycles	3	3	4	7	3	3	4	6	2	4	3	1
USE THESE VOLUMES	TOTAL	472	580	595	1115	580	580	683	965	365	569	555	85
	Cars	431	530	543	1019	530	530	624	882	352	548	535	82
	Medium Trucks	23	28	29	55	28	28	33	47	7	10	10	2
	Heavy Trucks	10	12	13	24	12	12	14	20	3	5	4	1
	Buses	5	7	6	10	7	7	8	10	1	2	3	-1
	Motorcycles	3	3	4	7	3	3	4	6	2	4	3	1
	Speed	35.0	14.0	35.0	35.0	14.0	14.0	35.0	35.0	25.0	35.0	35.0	35.0

		High St SB				Kindig Ln		SR 2011			
		Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Eisenhower Dr Ext	NB: Eisenhower Dr Ext to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Eisenhower Dr Ext	SB: Eisenhower Dr Ext to Edgegrove Rd (SR 2008)
	Predicted Volumes	220	242	311	195	89	248	165	117	154	124
	LOS 'D/E' Analysis Result**	580	580	580	580	580	580	790	790	790	790
	# of lanes	1	1	1	1	1	1	1	1	1	1
	Design Speed	30	40	40	40	40	40	45	45	45	45
	Truck %	3.0%	3.0%	3.0%	3.0%	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		220	242	311	195	89	248	165	117	154	124
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	96.4%	96.4%	96.4%	96.4%	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	1.8%	1.8%	1.8%	1.8%	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	0.8%	0.8%	0.8%	0.8%	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%
	Buses	0.4%	0.4%	0.4%	0.4%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	212.0	232.7	299.2	187.9	80.5	224.2	150.8	106.5	140.3	113.3
	Medium Trucks	4.0	4.4	5.7	3.6	4.9	13.6	8.1	5.7	7.5	6.1
	Heavy Trucks	1.7	1.9	2.5	1.5	2.1	5.9	3.5	2.5	3.2	2.6
	Buses	0.8	0.9	1.2	0.7	1.0	2.8	1.7	1.2	1.5	1.2
	Motorcycles	1.4	1.5	1.9	1.2	0.5	1.5	1.0	0.7	0.9	0.7
based on ave. % for all TMS											
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No
	Cars	212	233	299	188	80	224	151	106	140	113
	Motorcycles	1	2	2	1	1	1	1	1	1	1
USE THESE VOLUMES	TOTAL	220	242	311	195	89	248	165	117	154	124
	Cars	212	233	299	188	80	224	151	106	140	113
	Medium Trucks	4	4	6	4	5	14	8	6	8	6
	Heavy Trucks	2	2	2	2	2	6	3	2	3	3
	Buses	1	1	2	0	1	3	2	2	2	1
	Motorcycles	1	2	2	1	1	1	1	1	1	1
	Speed	25.0	35.0	35.0	35.0	35.0	35.0	40.0	40.0	40.0	40.0

		SR 2006				Sunday Dr	
		EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)
	Predicted Volumes	290	186	283	127	368	362
	LOS 'D/E' Analysis Result**	790	790	790	790	580	580
	# of lanes	1	1	1	1	1	1
	Design Speed	50	50	50	50	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		290	186	283	127	368	362
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%
	Buses	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	265.1	169.6	258.2	115.6	358.3	352.5
	Medium Trucks	14.2	9.1	13.8	6.2	4.5	4.4
	Heavy Trucks	6.1	3.9	6.0	2.7	1.9	1.9
	Buses	2.9	1.9	2.8	1.3	0.9	0.9
	Motorcycles	1.7	1.1	1.7	0.8	2.3	2.3
based on ave. % for all TMS							
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No
	Cars	265	170	258	116	358	352
	Motorcycles	2	1	2	1	2	2
USE THESE VOLUMES	TOTAL	290	186	283	127	368	362
	Cars	265	170	258	116	358	352
	Medium Trucks	14	9	14	6	4	4
	Heavy Trucks	6	4	6	3	2	2
	Buses	3	2	3	1	2	2
	Motorcycles	2	1	2	1	2	2
	Speed	45.0	45.0	45.0	45.0	35.0	35.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - Alt4_5 PM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Alternative 4/5 (2042)

Evening Peak Hour

		Eisenhower Dr/Alt EB						Eisenhower Dr/Alt WB					
		Hanover Rd (SR 0116) to Sunday Drive (T460)	Sunday Dr (T460) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St (SR 2011)	Church St (SR 2011) to Oxford Ave (SR 2008)	Oxford Ave (SR 2008) to High Street (T535/Boro)	High St (T535/Boro) to Carlisle St (SR 0094)	Hanover Rd (SR 0116) to Sunday Drive (T460)	Sunday Dr (T460) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St (SR 2011)	Church St (SR 2011) to Oxford Ave (SR 2008)	Oxford Ave (SR 2008) to High Street (T535/Boro)	High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	91	449	417	453	458	891	208	567	586	628	612	657
	LOS 'D/E' Analysis Result**	740	740	740	740	740	580	740	740	740	740	740	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	50	50	50	50	30	50	50	50	50	50	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'
		91	449	417	453	458	580	208	567	586	628	612	580
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	84.1	414.9	384.8	418.6	422.7	535.9	192.2	523.9	541.5	580.3	565.0	535.9
	Medium Trucks	3.9	19.2	17.8	19.4	19.6	24.8	8.9	24.3	25.1	26.9	26.2	24.8
	Heavy Trucks	1.7	8.3	7.7	8.4	8.5	10.7	3.8	10.5	10.8	11.6	11.3	10.7
	Buses	0.8	3.9	3.6	4.0	4.0	5.1	1.8	5.0	5.1	5.5	5.4	5.1
	Motorcycles	0.5	2.7	2.5	2.7	2.8	3.5	1.3	3.4	3.5	3.8	3.7	3.5
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	84	415	385	419	423	536	192	524	541	580	565	536
	Motorcycles	1	3	3	3	3	3	1	3	4	4	4	3
USE THESE VOLUMES	**TOTAL**	91	449	417	453	458	580	208	567	586	628	612	580
	Cars	84	415	385	419	423	536	192	524	541	580	565	536
	Medium Trucks	4	19	18	19	20	25	9	24	25	27	26	25
	Heavy Trucks	2	8	8	8	8	11	4	10	11	12	11	11
	Buses	0	4	3	4	4	5	2	6	5	5	6	5
	Motorcycles	1	3	3	3	3	3	1	3	4	4	4	3
	Speed	45.0	45.0	45.0	45.0	45.0	10.0	45.0	45.0	45.0	45.0	45.0	10.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

Appendix E

TNM RESULTS & ERU CALCULATIONS

TNM ANALYSIS RESULTS

Worst case noise levels are predicted using TNM Version 2.5 for the following conditions: Existing 2015 and 2042 Build. A validated TNM model is the basis to create the TNM runs when predicting these different scenarios.

Once the model is validated, so long as no further modifications are made to terrain or structural features, valid noise level predictions can be made under any traffic conditions deemed appropriate for study. An unlimited number of modeled receptors could be included in the subsequent model runs.

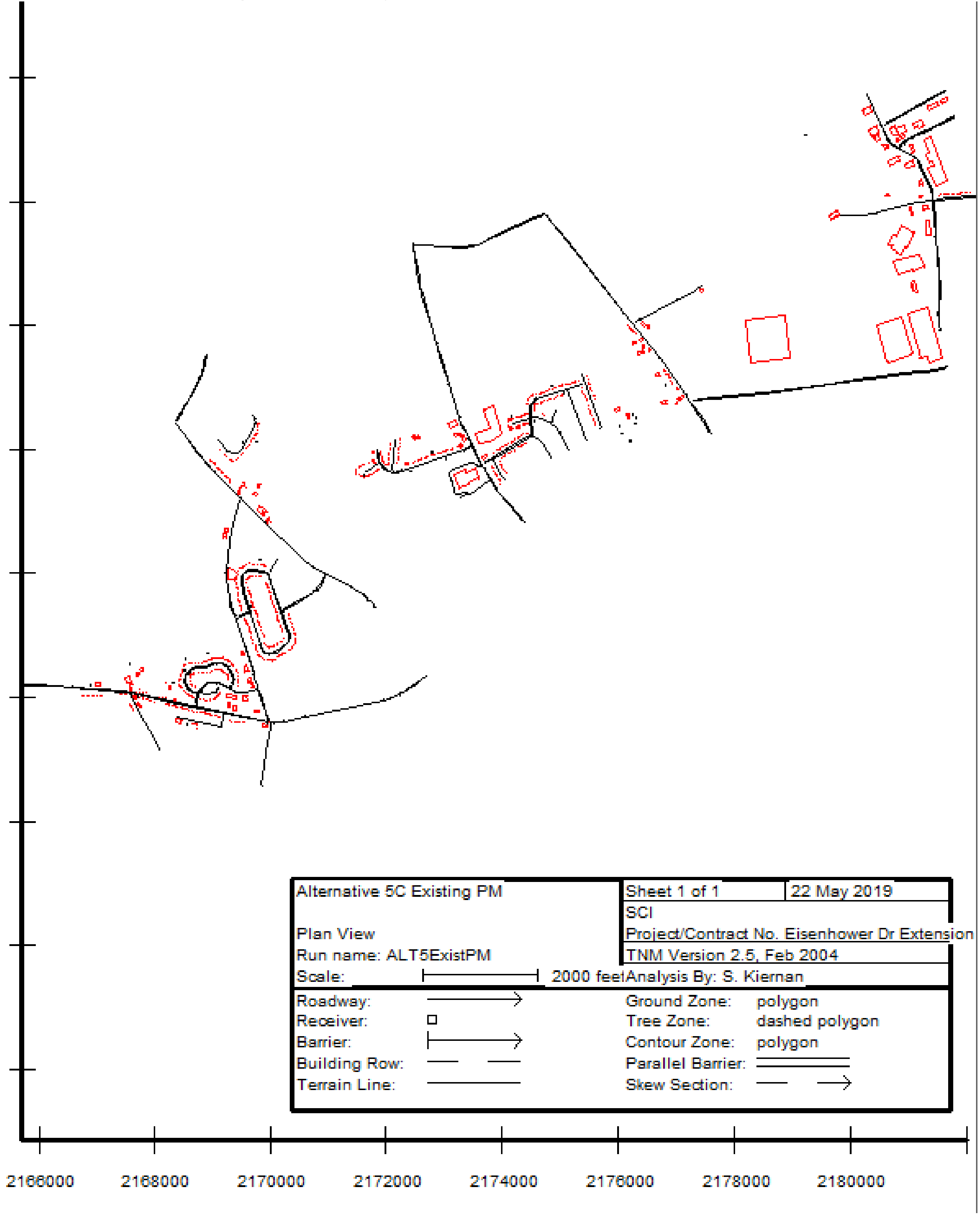
TNM sound level results output and TNM layout plan views are included within.

ERU CALCULATIONS

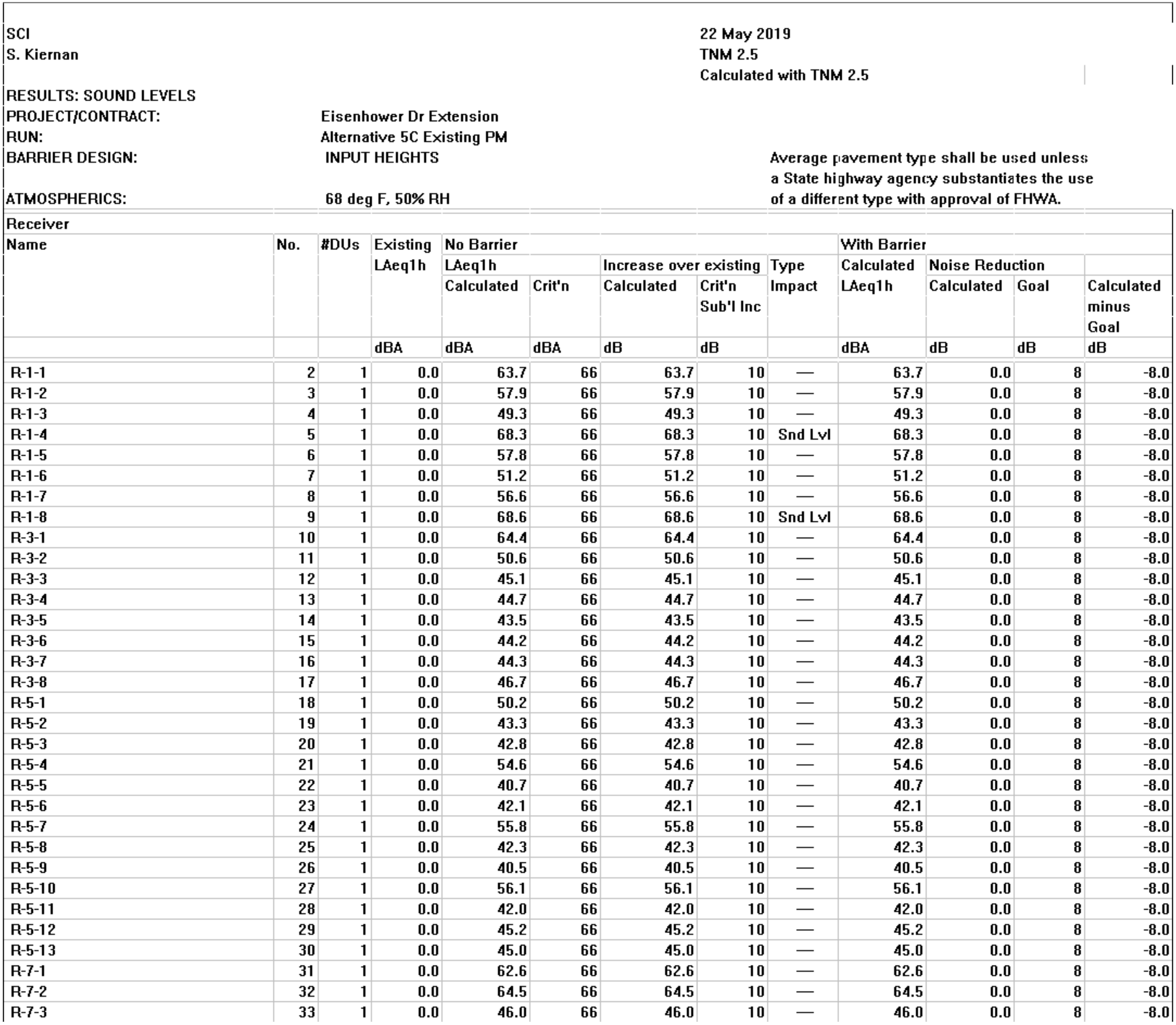
PennDOT's methodology with nonresidential receivers is to represent them with one receiver having an Equivalent Residential Unit (ERU) value which represents the degree of use which occurs at a site. The ERU value is a function of the "person-hours per year" of use of the site, expressed as a ratio to the "person-hours per year" of use by an average single-family dwelling in Pennsylvania. While the ERU value for a single-family residence is always one, ERU values for other sites will vary based on a variety of factors.

The calculated ERU tables for this project are included within.

TNM Plan View of 2015 Existing Worst-Case Study Area:



2015 Existing Worst Case – PM:



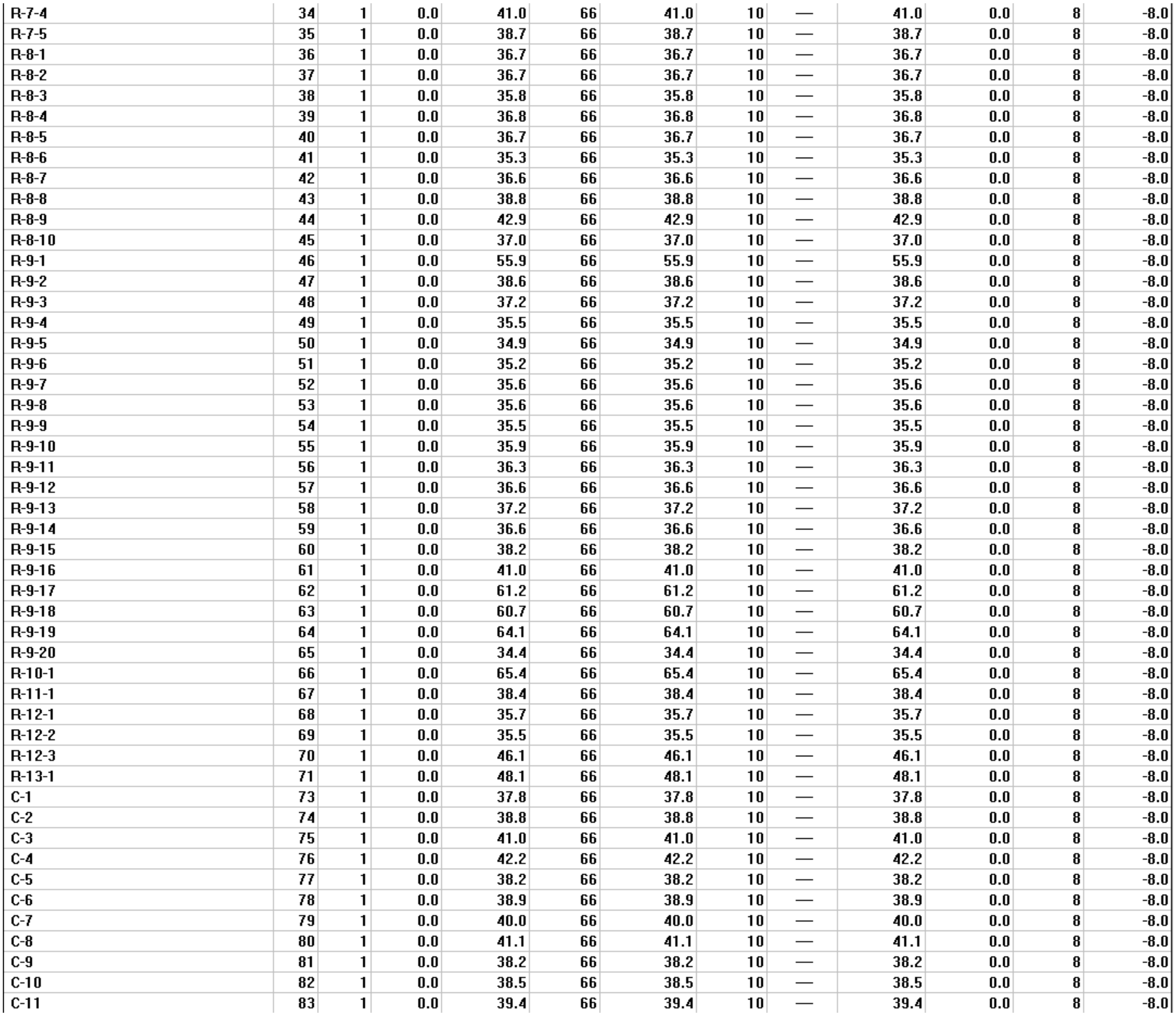
SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

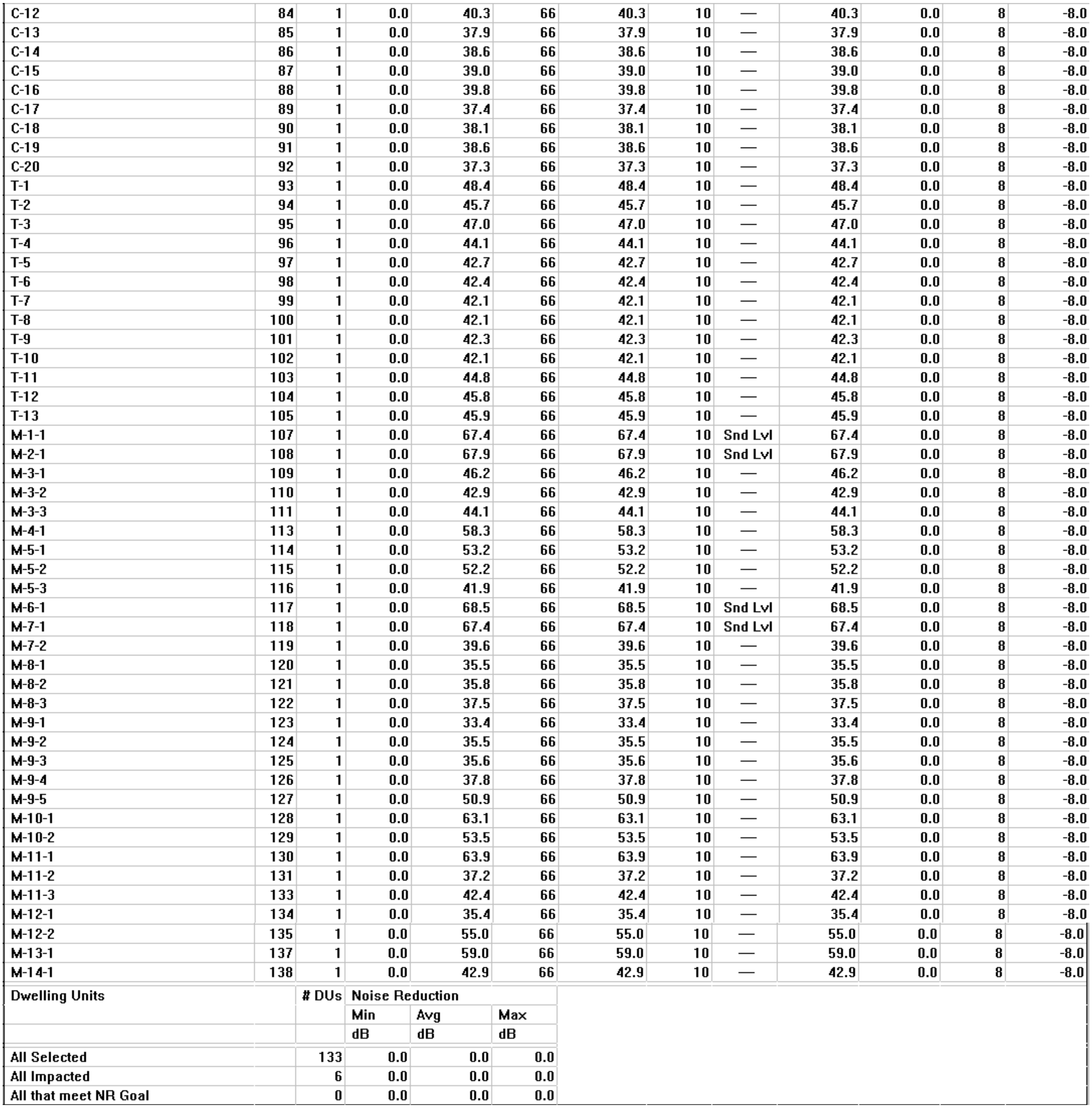
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: Alternative 5C Existing PM
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R-1-1	2	1	0.0	63.7	66	63.7	10	—	63.7	0.0	8	-8.0
R-1-2	3	1	0.0	57.9	66	57.9	10	—	57.9	0.0	8	-8.0
R-1-3	4	1	0.0	49.3	66	49.3	10	—	49.3	0.0	8	-8.0
R-1-4	5	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
R-1-5	6	1	0.0	57.8	66	57.8	10	—	57.8	0.0	8	-8.0
R-1-6	7	1	0.0	51.2	66	51.2	10	—	51.2	0.0	8	-8.0
R-1-7	8	1	0.0	56.6	66	56.6	10	—	56.6	0.0	8	-8.0
R-1-8	9	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
R-3-1	10	1	0.0	64.4	66	64.4	10	—	64.4	0.0	8	-8.0
R-3-2	11	1	0.0	50.6	66	50.6	10	—	50.6	0.0	8	-8.0
R-3-3	12	1	0.0	45.1	66	45.1	10	—	45.1	0.0	8	-8.0
R-3-4	13	1	0.0	44.7	66	44.7	10	—	44.7	0.0	8	-8.0
R-3-5	14	1	0.0	43.5	66	43.5	10	—	43.5	0.0	8	-8.0
R-3-6	15	1	0.0	44.2	66	44.2	10	—	44.2	0.0	8	-8.0
R-3-7	16	1	0.0	44.3	66	44.3	10	—	44.3	0.0	8	-8.0
R-3-8	17	1	0.0	46.7	66	46.7	10	—	46.7	0.0	8	-8.0
R-5-1	18	1	0.0	50.2	66	50.2	10	—	50.2	0.0	8	-8.0
R-5-2	19	1	0.0	43.3	66	43.3	10	—	43.3	0.0	8	-8.0
R-5-3	20	1	0.0	42.8	66	42.8	10	—	42.8	0.0	8	-8.0
R-5-4	21	1	0.0	54.6	66	54.6	10	—	54.6	0.0	8	-8.0
R-5-5	22	1	0.0	40.7	66	40.7	10	—	40.7	0.0	8	-8.0
R-5-6	23	1	0.0	42.1	66	42.1	10	—	42.1	0.0	8	-8.0
R-5-7	24	1	0.0	55.8	66	55.8	10	—	55.8	0.0	8	-8.0
R-5-8	25	1	0.0	42.3	66	42.3	10	—	42.3	0.0	8	-8.0
R-5-9	26	1	0.0	40.5	66	40.5	10	—	40.5	0.0	8	-8.0
R-5-10	27	1	0.0	56.1	66	56.1	10	—	56.1	0.0	8	-8.0
R-5-11	28	1	0.0	42.0	66	42.0	10	—	42.0	0.0	8	-8.0
R-5-12	29	1	0.0	45.2	66	45.2	10	—	45.2	0.0	8	-8.0
R-5-13	30	1	0.0	45.0	66	45.0	10	—	45.0	0.0	8	-8.0
R-7-1	31	1	0.0	62.6	66	62.6	10	—	62.6	0.0	8	-8.0
R-7-2	32	1	0.0	64.5	66	64.5	10	—	64.5	0.0	8	-8.0
R-7-3	33	1	0.0	46.0	66	46.0	10	—	46.0	0.0	8	-8.0



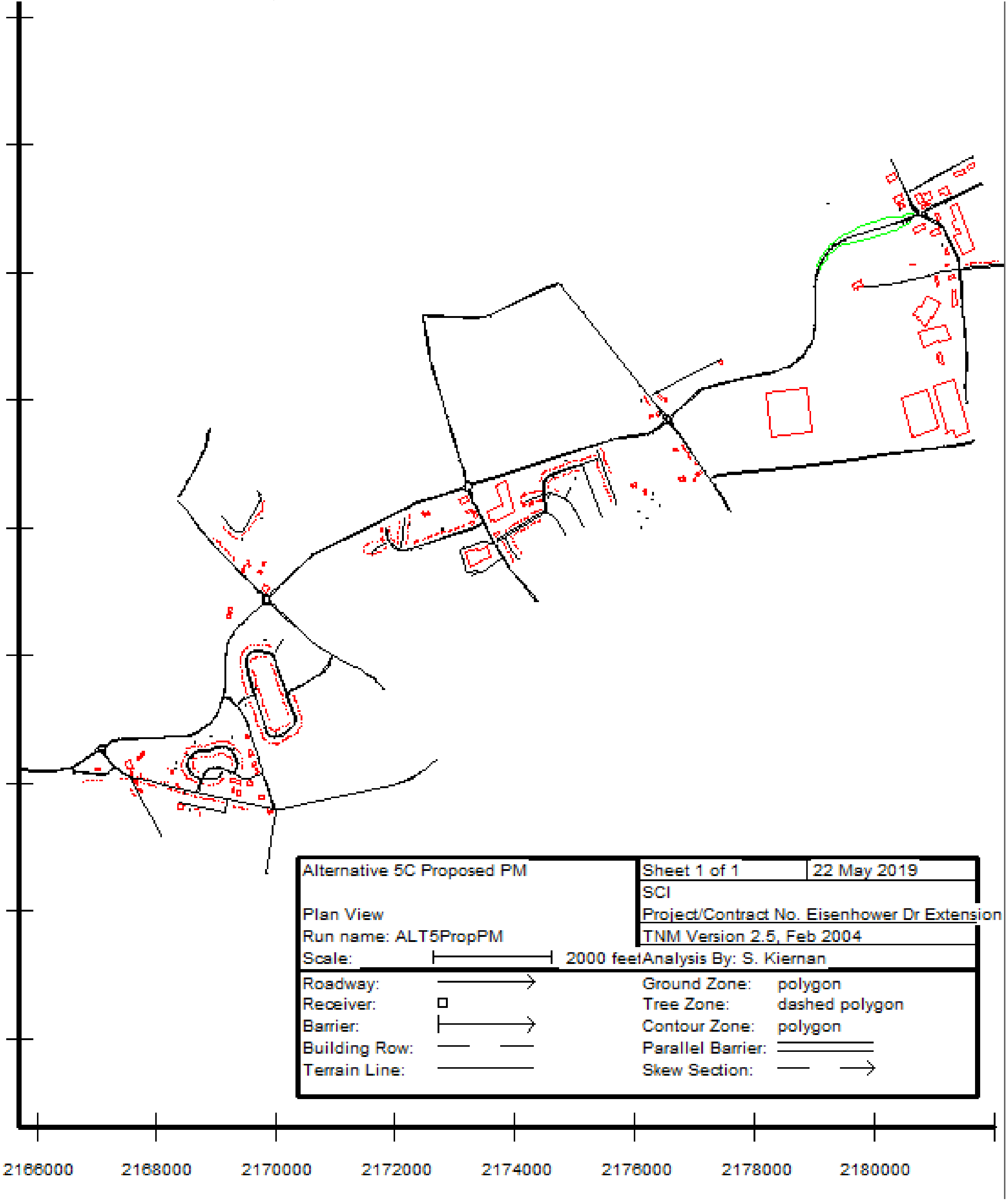
R-7-4	34	1	0.0	41.0	66	41.0	10	—	41.0	0.0	8	-8.0
R-7-5	35	1	0.0	38.7	66	38.7	10	—	38.7	0.0	8	-8.0
R-8-1	36	1	0.0	36.7	66	36.7	10	—	36.7	0.0	8	-8.0
R-8-2	37	1	0.0	36.7	66	36.7	10	—	36.7	0.0	8	-8.0
R-8-3	38	1	0.0	35.8	66	35.8	10	—	35.8	0.0	8	-8.0
R-8-4	39	1	0.0	36.8	66	36.8	10	—	36.8	0.0	8	-8.0
R-8-5	40	1	0.0	36.7	66	36.7	10	—	36.7	0.0	8	-8.0
R-8-6	41	1	0.0	35.3	66	35.3	10	—	35.3	0.0	8	-8.0
R-8-7	42	1	0.0	36.6	66	36.6	10	—	36.6	0.0	8	-8.0
R-8-8	43	1	0.0	38.8	66	38.8	10	—	38.8	0.0	8	-8.0
R-8-9	44	1	0.0	42.9	66	42.9	10	—	42.9	0.0	8	-8.0
R-8-10	45	1	0.0	37.0	66	37.0	10	—	37.0	0.0	8	-8.0
R-9-1	46	1	0.0	55.9	66	55.9	10	—	55.9	0.0	8	-8.0
R-9-2	47	1	0.0	38.6	66	38.6	10	—	38.6	0.0	8	-8.0
R-9-3	48	1	0.0	37.2	66	37.2	10	—	37.2	0.0	8	-8.0
R-9-4	49	1	0.0	35.5	66	35.5	10	—	35.5	0.0	8	-8.0
R-9-5	50	1	0.0	34.9	66	34.9	10	—	34.9	0.0	8	-8.0
R-9-6	51	1	0.0	35.2	66	35.2	10	—	35.2	0.0	8	-8.0
R-9-7	52	1	0.0	35.6	66	35.6	10	—	35.6	0.0	8	-8.0
R-9-8	53	1	0.0	35.6	66	35.6	10	—	35.6	0.0	8	-8.0
R-9-9	54	1	0.0	35.5	66	35.5	10	—	35.5	0.0	8	-8.0
R-9-10	55	1	0.0	35.9	66	35.9	10	—	35.9	0.0	8	-8.0
R-9-11	56	1	0.0	36.3	66	36.3	10	—	36.3	0.0	8	-8.0
R-9-12	57	1	0.0	36.6	66	36.6	10	—	36.6	0.0	8	-8.0
R-9-13	58	1	0.0	37.2	66	37.2	10	—	37.2	0.0	8	-8.0
R-9-14	59	1	0.0	36.6	66	36.6	10	—	36.6	0.0	8	-8.0
R-9-15	60	1	0.0	38.2	66	38.2	10	—	38.2	0.0	8	-8.0
R-9-16	61	1	0.0	41.0	66	41.0	10	—	41.0	0.0	8	-8.0
R-9-17	62	1	0.0	61.2	66	61.2	10	—	61.2	0.0	8	-8.0
R-9-18	63	1	0.0	60.7	66	60.7	10	—	60.7	0.0	8	-8.0
R-9-19	64	1	0.0	64.1	66	64.1	10	—	64.1	0.0	8	-8.0
R-9-20	65	1	0.0	34.4	66	34.4	10	—	34.4	0.0	8	-8.0
R-10-1	66	1	0.0	65.4	66	65.4	10	—	65.4	0.0	8	-8.0
R-11-1	67	1	0.0	38.4	66	38.4	10	—	38.4	0.0	8	-8.0
R-12-1	68	1	0.0	35.7	66	35.7	10	—	35.7	0.0	8	-8.0
R-12-2	69	1	0.0	35.5	66	35.5	10	—	35.5	0.0	8	-8.0
R-12-3	70	1	0.0	46.1	66	46.1	10	—	46.1	0.0	8	-8.0
R-13-1	71	1	0.0	48.1	66	48.1	10	—	48.1	0.0	8	-8.0
C-1	73	1	0.0	37.8	66	37.8	10	—	37.8	0.0	8	-8.0
C-2	74	1	0.0	38.8	66	38.8	10	—	38.8	0.0	8	-8.0
C-3	75	1	0.0	41.0	66	41.0	10	—	41.0	0.0	8	-8.0
C-4	76	1	0.0	42.2	66	42.2	10	—	42.2	0.0	8	-8.0
C-5	77	1	0.0	38.2	66	38.2	10	—	38.2	0.0	8	-8.0
C-6	78	1	0.0	38.9	66	38.9	10	—	38.9	0.0	8	-8.0
C-7	79	1	0.0	40.0	66	40.0	10	—	40.0	0.0	8	-8.0
C-8	80	1	0.0	41.1	66	41.1	10	—	41.1	0.0	8	-8.0
C-9	81	1	0.0	38.2	66	38.2	10	—	38.2	0.0	8	-8.0
C-10	82	1	0.0	38.5	66	38.5	10	—	38.5	0.0	8	-8.0
C-11	83	1	0.0	39.4	66	39.4	10	—	39.4	0.0	8	-8.0



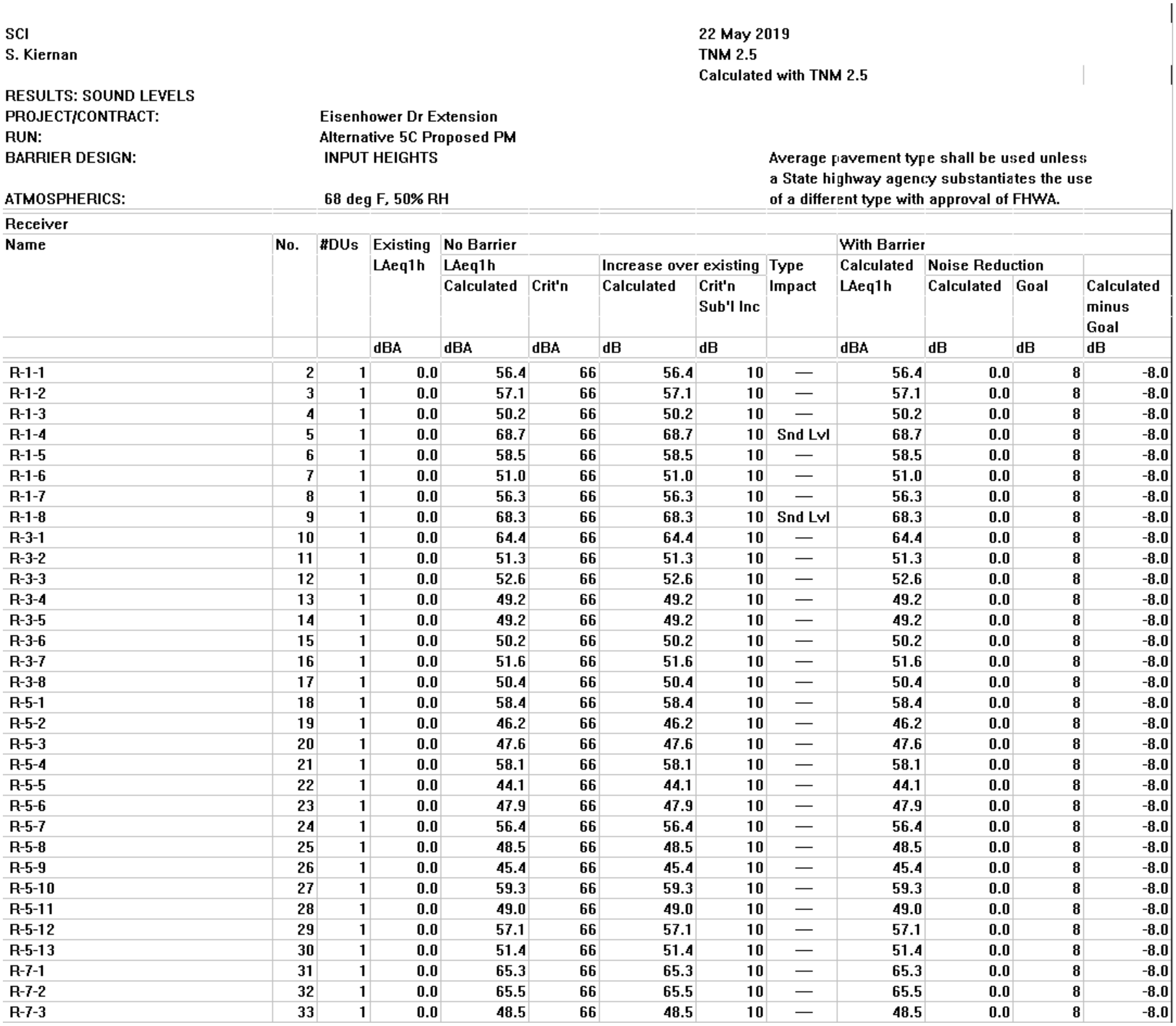
C-12	84	1	0.0	40.3	66	40.3	10	—	40.3	0.0	8	-8.0
C-13	85	1	0.0	37.9	66	37.9	10	—	37.9	0.0	8	-8.0
C-14	86	1	0.0	38.6	66	38.6	10	—	38.6	0.0	8	-8.0
C-15	87	1	0.0	39.0	66	39.0	10	—	39.0	0.0	8	-8.0
C-16	88	1	0.0	39.8	66	39.8	10	—	39.8	0.0	8	-8.0
C-17	89	1	0.0	37.4	66	37.4	10	—	37.4	0.0	8	-8.0
C-18	90	1	0.0	38.1	66	38.1	10	—	38.1	0.0	8	-8.0
C-19	91	1	0.0	38.6	66	38.6	10	—	38.6	0.0	8	-8.0
C-20	92	1	0.0	37.3	66	37.3	10	—	37.3	0.0	8	-8.0
T-1	93	1	0.0	48.4	66	48.4	10	—	48.4	0.0	8	-8.0
T-2	94	1	0.0	45.7	66	45.7	10	—	45.7	0.0	8	-8.0
T-3	95	1	0.0	47.0	66	47.0	10	—	47.0	0.0	8	-8.0
T-4	96	1	0.0	44.1	66	44.1	10	—	44.1	0.0	8	-8.0
T-5	97	1	0.0	42.7	66	42.7	10	—	42.7	0.0	8	-8.0
T-6	98	1	0.0	42.4	66	42.4	10	—	42.4	0.0	8	-8.0
T-7	99	1	0.0	42.1	66	42.1	10	—	42.1	0.0	8	-8.0
T-8	100	1	0.0	42.1	66	42.1	10	—	42.1	0.0	8	-8.0
T-9	101	1	0.0	42.3	66	42.3	10	—	42.3	0.0	8	-8.0
T-10	102	1	0.0	42.1	66	42.1	10	—	42.1	0.0	8	-8.0
T-11	103	1	0.0	44.8	66	44.8	10	—	44.8	0.0	8	-8.0
T-12	104	1	0.0	45.8	66	45.8	10	—	45.8	0.0	8	-8.0
T-13	105	1	0.0	45.9	66	45.9	10	—	45.9	0.0	8	-8.0
M-1-1	107	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
M-2-1	108	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8	-8.0
M-3-1	109	1	0.0	46.2	66	46.2	10	—	46.2	0.0	8	-8.0
M-3-2	110	1	0.0	42.9	66	42.9	10	—	42.9	0.0	8	-8.0
M-3-3	111	1	0.0	44.1	66	44.1	10	—	44.1	0.0	8	-8.0
M-4-1	113	1	0.0	58.3	66	58.3	10	—	58.3	0.0	8	-8.0
M-5-1	114	1	0.0	53.2	66	53.2	10	—	53.2	0.0	8	-8.0
M-5-2	115	1	0.0	52.2	66	52.2	10	—	52.2	0.0	8	-8.0
M-5-3	116	1	0.0	41.9	66	41.9	10	—	41.9	0.0	8	-8.0
M-6-1	117	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	8	-8.0
M-7-1	118	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
M-7-2	119	1	0.0	39.6	66	39.6	10	—	39.6	0.0	8	-8.0
M-8-1	120	1	0.0	35.5	66	35.5	10	—	35.5	0.0	8	-8.0
M-8-2	121	1	0.0	35.8	66	35.8	10	—	35.8	0.0	8	-8.0
M-8-3	122	1	0.0	37.5	66	37.5	10	—	37.5	0.0	8	-8.0
M-9-1	123	1	0.0	33.4	66	33.4	10	—	33.4	0.0	8	-8.0
M-9-2	124	1	0.0	35.5	66	35.5	10	—	35.5	0.0	8	-8.0
M-9-3	125	1	0.0	35.6	66	35.6	10	—	35.6	0.0	8	-8.0
M-9-4	126	1	0.0	37.8	66	37.8	10	—	37.8	0.0	8	-8.0
M-9-5	127	1	0.0	50.9	66	50.9	10	—	50.9	0.0	8	-8.0
M-10-1	128	1	0.0	63.1	66	63.1	10	—	63.1	0.0	8	-8.0
M-10-2	129	1	0.0	53.5	66	53.5	10	—	53.5	0.0	8	-8.0
M-11-1	130	1	0.0	63.9	66	63.9	10	—	63.9	0.0	8	-8.0
M-11-2	131	1	0.0	37.2	66	37.2	10	—	37.2	0.0	8	-8.0
M-11-3	133	1	0.0	42.4	66	42.4	10	—	42.4	0.0	8	-8.0
M-12-1	134	1	0.0	35.4	66	35.4	10	—	35.4	0.0	8	-8.0
M-12-2	135	1	0.0	55.0	66	55.0	10	—	55.0	0.0	8	-8.0
M-13-1	137	1	0.0	59.0	66	59.0	10	—	59.0	0.0	8	-8.0
M-14-1	138	1	0.0	42.9	66	42.9	10	—	42.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	133	0.0	0.0	0.0
All Impacted	6	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

TNM Plan View of 2042 Build Study Area:



2042 Build – PM:



SCI
S. Kiernan

22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: Alternative 5C Proposed PM
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R-1-1	2	1	0.0	56.4	66	56.4	10	—	56.4	0.0	8	-8.0
R-1-2	3	1	0.0	57.1	66	57.1	10	—	57.1	0.0	8	-8.0
R-1-3	4	1	0.0	50.2	66	50.2	10	—	50.2	0.0	8	-8.0
R-1-4	5	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
R-1-5	6	1	0.0	58.5	66	58.5	10	—	58.5	0.0	8	-8.0
R-1-6	7	1	0.0	51.0	66	51.0	10	—	51.0	0.0	8	-8.0
R-1-7	8	1	0.0	56.3	66	56.3	10	—	56.3	0.0	8	-8.0
R-1-8	9	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
R-3-1	10	1	0.0	64.4	66	64.4	10	—	64.4	0.0	8	-8.0
R-3-2	11	1	0.0	51.3	66	51.3	10	—	51.3	0.0	8	-8.0
R-3-3	12	1	0.0	52.6	66	52.6	10	—	52.6	0.0	8	-8.0
R-3-4	13	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	-8.0
R-3-5	14	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	-8.0
R-3-6	15	1	0.0	50.2	66	50.2	10	—	50.2	0.0	8	-8.0
R-3-7	16	1	0.0	51.6	66	51.6	10	—	51.6	0.0	8	-8.0
R-3-8	17	1	0.0	50.4	66	50.4	10	—	50.4	0.0	8	-8.0
R-5-1	18	1	0.0	58.4	66	58.4	10	—	58.4	0.0	8	-8.0
R-5-2	19	1	0.0	46.2	66	46.2	10	—	46.2	0.0	8	-8.0
R-5-3	20	1	0.0	47.6	66	47.6	10	—	47.6	0.0	8	-8.0
R-5-4	21	1	0.0	58.1	66	58.1	10	—	58.1	0.0	8	-8.0
R-5-5	22	1	0.0	44.1	66	44.1	10	—	44.1	0.0	8	-8.0
R-5-6	23	1	0.0	47.9	66	47.9	10	—	47.9	0.0	8	-8.0
R-5-7	24	1	0.0	56.4	66	56.4	10	—	56.4	0.0	8	-8.0
R-5-8	25	1	0.0	48.5	66	48.5	10	—	48.5	0.0	8	-8.0
R-5-9	26	1	0.0	45.4	66	45.4	10	—	45.4	0.0	8	-8.0
R-5-10	27	1	0.0	59.3	66	59.3	10	—	59.3	0.0	8	-8.0
R-5-11	28	1	0.0	49.0	66	49.0	10	—	49.0	0.0	8	-8.0
R-5-12	29	1	0.0	57.1	66	57.1	10	—	57.1	0.0	8	-8.0
R-5-13	30	1	0.0	51.4	66	51.4	10	—	51.4	0.0	8	-8.0
R-7-1	31	1	0.0	65.3	66	65.3	10	—	65.3	0.0	8	-8.0
R-7-2	32	1	0.0	65.5	66	65.5	10	—	65.5	0.0	8	-8.0
R-7-3	33	1	0.0	48.5	66	48.5	10	—	48.5	0.0	8	-8.0

R-7-4	34	1	0.0	44.5	66	44.5	10	—	44.5	0.0	8	-8.0
R-7-5	35	1	0.0	44.1	66	44.1	10	—	44.1	0.0	8	-8.0
R-8-1	36	1	0.0	49.3	66	49.3	10	—	49.3	0.0	8	-8.0
R-8-2	37	1	0.0	51.0	66	51.0	10	—	51.0	0.0	8	-8.0
R-8-3	38	1	0.0	50.2	66	50.2	10	—	50.2	0.0	8	-8.0
R-8-4	39	1	0.0	61.8	66	61.8	10	—	61.8	0.0	8	-8.0
R-8-5	40	1	0.0	45.4	66	45.4	10	—	45.4	0.0	8	-8.0
R-8-6	41	1	0.0	48.4	66	48.4	10	—	48.4	0.0	8	-8.0
R-8-7	42	1	0.0	61.5	66	61.5	10	—	61.5	0.0	8	-8.0
R-8-8	43	1	0.0	45.4	66	45.4	10	—	45.4	0.0	8	-8.0
R-8-9	44	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	-8.0
R-8-10	45	1	0.0	48.1	66	48.1	10	—	48.1	0.0	8	-8.0
R-9-1	46	1	0.0	58.4	66	58.4	10	—	58.4	0.0	8	-8.0
R-9-2	47	1	0.0	43.6	66	43.6	10	—	43.6	0.0	8	-8.0
R-9-3	48	1	0.0	44.3	66	44.3	10	—	44.3	0.0	8	-8.0
R-9-4	49	1	0.0	45.0	66	45.0	10	—	45.0	0.0	8	-8.0
R-9-5	50	1	0.0	48.1	66	48.1	10	—	48.1	0.0	8	-8.0
R-9-6	51	1	0.0	53.7	66	53.7	10	—	53.7	0.0	8	-8.0
R-9-7	52	1	0.0	64.1	66	64.1	10	—	64.1	0.0	8	-8.0
R-9-8	53	1	0.0	65.3	66	65.3	10	—	65.3	0.0	8	-8.0
R-9-9	54	1	0.0	55.1	66	55.1	10	—	55.1	0.0	8	-8.0
R-9-10	55	1	0.0	47.7	66	47.7	10	—	47.7	0.0	8	-8.0
R-9-11	56	1	0.0	55.7	66	55.7	10	—	55.7	0.0	8	-8.0
R-9-12	57	1	0.0	65.1	66	65.1	10	—	65.1	0.0	8	-8.0
R-9-13	58	1	0.0	64.5	66	64.5	10	—	64.5	0.0	8	-8.0
R-9-14	59	1	0.0	53.6	66	53.6	10	—	53.6	0.0	8	-8.0
R-9-15	60	1	0.0	47.7	66	47.7	10	—	47.7	0.0	8	-8.0
R-9-16	61	1	0.0	45.9	66	45.9	10	—	45.9	0.0	8	-8.0
R-9-17	62	1	0.0	63.7	66	63.7	10	—	63.7	0.0	8	-8.0
R-9-18	63	1	0.0	62.8	66	62.8	10	—	62.8	0.0	8	-8.0
R-9-19	64	1	0.0	65.5	66	65.5	10	—	65.5	0.0	8	-8.0
R-9-20	65	1	0.0	48.3	66	48.3	10	—	48.3	0.0	8	-8.0
R-10-1	66	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
R-11-1	67	1	0.0	45.2	66	45.2	10	—	45.2	0.0	8	-8.0
R-12-1	68	1	0.0	43.9	66	43.9	10	—	43.9	0.0	8	-8.0
R-12-2	69	1	0.0	45.6	66	45.6	10	—	45.6	0.0	8	-8.0
R-12-3	70	1	0.0	46.7	66	46.7	10	—	46.7	0.0	8	-8.0
R-13-1	71	1	0.0	47.4	66	47.4	10	—	47.4	0.0	8	-8.0
C-1	73	1	0.0	44.7	66	44.7	10	—	44.7	0.0	8	-8.0
C-2	74	1	0.0	43.2	66	43.2	10	—	43.2	0.0	8	-8.0
C-3	75	1	0.0	46.2	66	46.2	10	—	46.2	0.0	8	-8.0
C-4	76	1	0.0	46.7	66	46.7	10	—	46.7	0.0	8	-8.0
C-5	77	1	0.0	44.1	66	44.1	10	—	44.1	0.0	8	-8.0
C-6	78	1	0.0	44.3	66	44.3	10	—	44.3	0.0	8	-8.0
C-7	79	1	0.0	45.1	66	45.1	10	—	45.1	0.0	8	-8.0
C-8	80	1	0.0	45.5	66	45.5	10	—	45.5	0.0	8	-8.0
C-9	81	1	0.0	43.3	66	43.3	10	—	43.3	0.0	8	-8.0
C-10	82	1	0.0	44.0	66	44.0	10	—	44.0	0.0	8	-8.0
C-11	83	1	0.0	44.2	66	44.2	10	—	44.2	0.0	8	-8.0

C-12	84	1	0.0	44.6	66	44.6	10	—	44.6	0.0	8	-8.0
C-13	85	1	0.0	43.0	66	43.0	10	—	43.0	0.0	8	-8.0
C-14	86	1	0.0	43.2	66	43.2	10	—	43.2	0.0	8	-8.0
C-15	87	1	0.0	43.4	66	43.4	10	—	43.4	0.0	8	-8.0
C-16	88	1	0.0	43.7	66	43.7	10	—	43.7	0.0	8	-8.0
C-17	89	1	0.0	42.4	66	42.4	10	—	42.4	0.0	8	-8.0
C-18	90	1	0.0	42.6	66	42.6	10	—	42.6	0.0	8	-8.0
C-19	91	1	0.0	42.7	66	42.7	10	—	42.7	0.0	8	-8.0
C-20	92	1	0.0	42.3	66	42.3	10	—	42.3	0.0	8	-8.0
T-1	93	1	0.0	50.5	66	50.5	10	—	50.5	0.0	8	-8.0
T-2	94	1	0.0	51.4	66	51.4	10	—	51.4	0.0	8	-8.0
T-3	95	1	0.0	51.3	66	51.3	10	—	51.3	0.0	8	-8.0
T-4	96	1	0.0	55.1	66	55.1	10	—	55.1	0.0	8	-8.0
T-5	97	1	0.0	59.2	66	59.2	10	—	59.2	0.0	8	-8.0
T-6	98	1	0.0	60.8	66	60.8	10	—	60.8	0.0	8	-8.0
T-7	99	1	0.0	58.4	66	58.4	10	—	58.4	0.0	8	-8.0
T-8	100	1	0.0	55.4	66	55.4	10	—	55.4	0.0	8	-8.0
T-9	101	1	0.0	53.4	66	53.4	10	—	53.4	0.0	8	-8.0
T-10	102	1	0.0	51.9	66	51.9	10	—	51.9	0.0	8	-8.0
T-11	103	1	0.0	51.5	66	51.5	10	—	51.5	0.0	8	-8.0
T-12	104	1	0.0	51.5	66	51.5	10	—	51.5	0.0	8	-8.0
T-13	105	1	0.0	49.0	66	49.0	10	—	49.0	0.0	8	-8.0
M-1-1	107	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	8	-8.0
M-2-1	108	1	0.0	60.0	66	60.0	10	—	60.0	0.0	8	-8.0
M-3-1	109	1	0.0	57.8	66	57.8	10	—	57.8	0.0	8	-8.0
M-3-2	110	1	0.0	57.3	66	57.3	10	—	57.3	0.0	8	-8.0
M-3-3	111	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	-8.0
M-4-1	113	1	0.0	63.0	66	63.0	10	—	63.0	0.0	8	-8.0
M-5-1	114	1	0.0	60.6	66	60.6	10	—	60.6	0.0	8	-8.0
M-5-2	115	1	0.0	62.8	66	62.8	10	—	62.8	0.0	8	-8.0
M-5-3	116	1	0.0	48.9	66	48.9	10	—	48.9	0.0	8	-8.0
M-7-1	118	1	0.0	68.4	66	68.4	10	Snd Lvl	68.4	0.0	8	-8.0
M-7-2	119	1	0.0	44.9	66	44.9	10	—	44.9	0.0	8	-8.0
M-8-1	120	1	0.0	57.1	66	57.1	10	—	57.1	0.0	8	-8.0
M-8-2	121	1	0.0	53.3	66	53.3	10	—	53.3	0.0	8	-8.0
M-8-3	122	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	-8.0
M-9-1	123	1	0.0	51.8	66	51.8	10	—	51.8	0.0	8	-8.0
M-9-2	124	1	0.0	55.9	66	55.9	10	—	55.9	0.0	8	-8.0
M-9-3	125	1	0.0	65.4	66	65.4	10	—	65.4	0.0	8	-8.0
M-9-4	126	1	0.0	59.5	66	59.5	10	—	59.5	0.0	8	-8.0
M-9-5	127	1	0.0	54.1	66	54.1	10	—	54.1	0.0	8	-8.0
M-10-1	128	1	0.0	64.3	66	64.3	10	—	64.3	0.0	8	-8.0
M-10-2	129	1	0.0	55.9	66	55.9	10	—	55.9	0.0	8	-8.0
M-11-1	130	1	0.0	65.7	66	65.7	10	—	65.7	0.0	8	-8.0
M-11-2	131	1	0.0	54.0	66	54.0	10	—	54.0	0.0	8	-8.0
M-11-3	133	1	0.0	57.3	66	57.3	10	—	57.3	0.0	8	-8.0
M-12-1	134	1	0.0	45.4	66	45.4	10	—	45.4	0.0	8	-8.0
M-12-2	135	1	0.0	54.3	66	54.3	10	—	54.3	0.0	8	-8.0
M-13-1	137	1	0.0	58.1	66	58.1	10	—	58.1	0.0	8	-8.0
M-14-1	138	1	0.0	44.2	66	44.2	10	—	44.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	132	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

TABLE E6C
SPREADSHEET FOR CALCULATING EQUIVALENT RESIDENTIAL UNIT VALUES FOR LAND USE ACTIVITY CATEGORY C SITES

	ACTIVITY CATEGORY >>>	C					
	Build Condition Design Year L_{eq} Noise Level Equal To Or Exceeding >>>	66 dB(A)					
	Build Condition DesignYear L_{eq} Greater Than Existing L_{eq} Noise Level By >>>	10 dB(A)					
	Apply Criteria To >>>	Exterior Locations					
		Adjustments to Grid Point Value(s) Within Area(s) Represented by Grid Points (130' Grid)			Use(s) Represented by a Single Location on the Property		
ROW NUMBER	POSSIBLE INPUT PARAMETERS	Villas of Cattails Trail	Catholic Cemetery (Case 2)	Historic Cemetery (Case 2)	Menonite School Playground	UTZ Soccer Fields	Athletic Facility-Brushtown Baseball Fields
7	Number of units in building						
8	Number of units exposed to project-related noise						
9	Average Event Attendence of Outside Use Area		4	2		68	60
10	Average Time Used by Each Person Per Event (hours)	0.5	1	1		2	2
11	Average Number of Events per Event Day					4	4
12	Length of Trail (feet)	1627					
13	Points on Trail (Round to Whole Number)	13					
14	Capacity of Site		7500	200			
15	Percent Occupied						
16	Hours Available Per Day						
17	Average Time Used by Each Person Per Day (hours)				1		
18	Persons Using Per Day	21			50		
19	Person-Hours Per Day	10.5			50	544	480
20	Days Per Year Used	365	6	6	300	240	240
21	Person-Hours Used Per Year	3832.5	180000	2400	15000	130560	115200
22	Equivalent Residential Units (ERU) = Row 22 Value divided by 1357	0.28	13	0	1	10	8
23	Grid Points Within Overall Land Use Activity Area	13	20	1			
24	Apply specific site's ERU Value to this number of points within 130' grid	13					
25	Retain ERU Value of 1 for the following number of points within 130' grid	0					
26	Apply this value equally to each grid point in 130' grid		0.6628	0.1768			
^ ROW NUMBER	COLUMN LETTER >>>	I	L	L	M	P	Q
	FOR EXAMPLES OF USE SEE >>>	TABLE E2			TABLE E3		
	Description of Example Specific Activity and Use	I12 feet of a hiking/jogging trail traverses a large park area that has been categorized by I23 grid points using the 130' grid method. On average, I18 people per day use the trail. The average time per person on this section of trail is I10 hours.	A cemetery with a capacity of L14 grave sites has been categorized by L23 grid points using the 130' grid method.. On average, each grave site is visited L20 times per year by L9 people for a period of L10 hours/visit.	A cemetery with a capacity of L14 grave sites has been categorized by L23 grid points using the 130' grid method.. On average, each grave site is visited L20 times per year by L9 people for a period of L10 hours/visit.	A school playground is used M20 days per year by M18 children per day. Each child uses the playground for an average period of M17 hour.	A community has a general purpose athletic facility which is used for baseball, football, and soccer Q20 days per year. On average, there are Q11 athletic events per day. Participants and viewers total Q9 for the average event. The average event is Q10 hours in duration.	A community has a general purpose athletic facility which is used for baseball, football, and soccer Q20 days per year. On average, there are Q11 athletic events per day. Participants and viewers total Q9 for the average event. The average event is Q10 hours in duration.
	Modeling Guidance	Place one point at 130' intervals along the trail (use 3 points to represent the 400' of trail).					
	Application of Equivalent Residential Unit (ERU)Value	Apply the ERU value of I22 to the I24 points on the trail and eliminate the I24 grid points in the 130' grid closest to the trail. Retain the ERU value of 1 for each of the remaining I25 grid points.	Distribute the ERU Value of L22 equally amongst all L23 grid points by applying the value of L26 to each grid point; .	Distribute the ERU Value of L22 equally amongst all L23 grid points by applying the value of L26 to each grid point; .	Apply the ERU value to a receptor point that represents the point of exterior use most exposed to the proposed project	Apply the ERU value to a receptor point that represents the point of exterior use most exposed to the proposed project	Apply the ERU value to a receptor point that represents the point of exterior use most exposed to the proposed project
		If the ERU value of I22 is less than 1, retain the 130' grid point ERU value of 1 for all grid points.	While the L26 value may be less than 1, it should still be applied	While the L26 value may be less than 1, it should still be applied	If the Equivalent Residential Use value is less than 0.5 (<1.0 rounded), this can be considerered a location without frequent human us and need not be modeled.		

NOTES:	
*	= Base Values representative of a typical resident in Pennsylvania
🟨	= Input Value
🟩	= Calculated Value
🟧	= Calculated ERU Value

Example of Input Keys:

G14 = Input Value for Column G, Row 14 (Capacity of Site Value for Apartment Pool in

TABLE E6E

SPREADSHEET FOR CALCULATING EQUIVALENT RESIDENTIAL UNIT VALUES FOR LAND USE ACTIVITY CATEGORY E SITES

	ACTIVITY CATEGORY >>>	E
	Build Condition Design Year L_{eq} Noise Level Equal To Or Exceeding >>>	71 dB(A)
	Build Condition DesignYear L_{eq} Greater Than Existing L_{eq} Noise Level By >>>	10 dB(A)
	Apply Criteria To >>>	Exterior Locations
		Use(s) Represented by a Single Location on the Property
ROW NUMBER	POSSIBLE INPUT PARAMETERS	Super 8 Motel
7	Number of units in building	
8	Number of units exposed to project-related noise	
9	Average Event Attendence of Outside Use Area	
10	Average Time Used by Each Person Per Event (hours)	
11	Average Number of Events per Event Day	
12	Length of Trail (feet)	
13	Points on Trail (Round to Whole Number)	
14	Capacity of Site	46
15	Percent Occupied	65
16	Hours Available Per Day	
17	Average Time Used by Each Person Per Day (hours)	0.5
18	Persons Using Per Day	1.5
19	Person-Hours Per Day	22.425
20	Days Per Year Used	365
21	Person-Hours Used Per Year	8185.125
22	Equivalent Residential Units (ERU) = Row 22 Value divided by 13578	1
23	Grid Points Within Overall Land Use Activity Area	
24	Apply specific site's ERU Value to this number of points within 130' grid	
25	Retain ERU Value of 1 for the following number of points within 130' grid	
26	Apply this value equally to each grid point in 130' grid	
^ ROW NUMBER	COLUMN LETTER >>>	W
	FOR EXAMPLES OF USE SEE >>>	TABLE E5
	Description of Example Specific Activity and Use	A W14 unit motel has an average occupancy rate of W15 percent, with an average of W18 people per room.. It has a popular exterior patio area that is available for multiple uses by all occupants during W20 days of the year On average, the normal guest uses this area for a W17 hour period.
	Modeling Guidance	
	Application of Equivalent Residential Unit (ERU)Value	Apply the ERU value to a receptor point that represents the point of exterior use most exposed to the proposed project If the Equivalent Residential Use value is less than 0.5 (<1.0 rounded), this can be considerered a location without frequent human us and need not be modeled.

NOTES:

*	= Base Values representative of a typical resident in Pennsylvania
🟨	= Input Value
🟩	= Calculated Value
🟧	= Calculated ERU Value

Example of Input Keys:

G14 = Input Value for Column G, Row 14 (Capacity of Site Value for

Appendix F

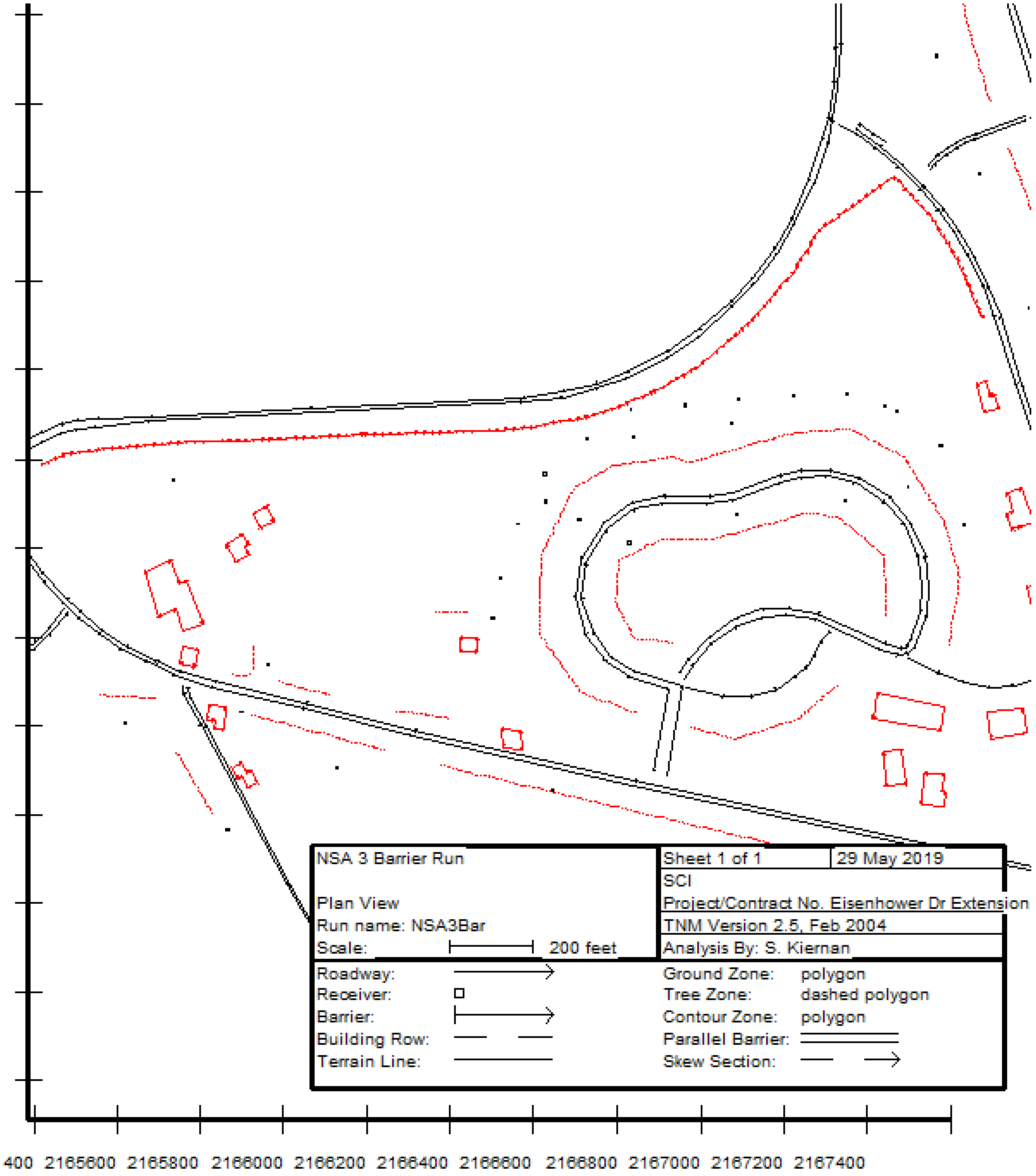
BARRIER OPTIMIZATION RESULTS

TNM BARRIER ANALYSIS RESULTS

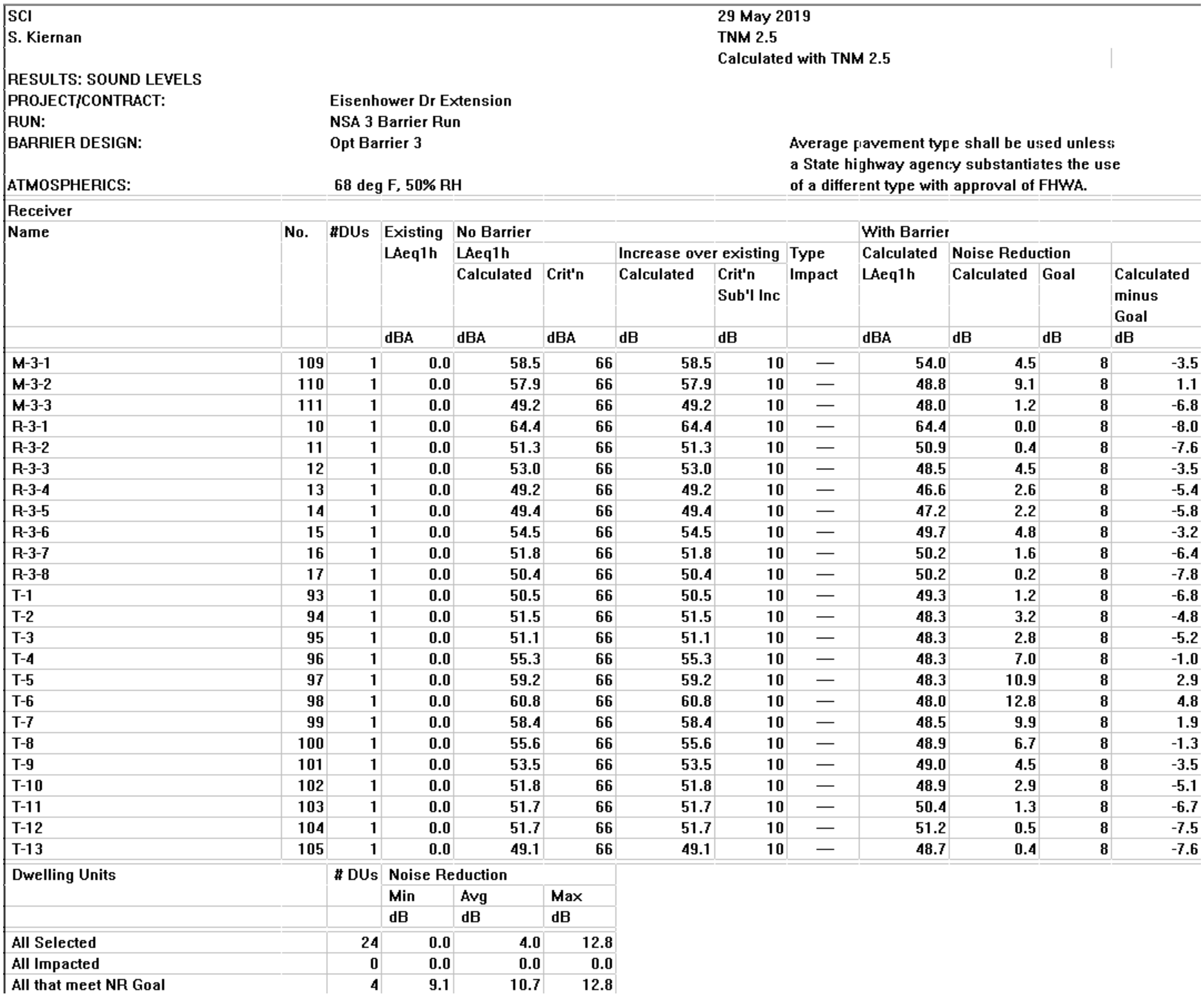
TNM noise result outputs and barrier segment descriptions for studied barriers can be found herein:

- NSA 3 Barrier
- NSA 5 Barrier
- NSA 8 Barrier
- NSA 9 Barrier
- NSA 10 Barrier
- NSA 11 Barrier
- NSA 12 Barrier

NSA 3 Barrier Plan View



NSA 3 Barrier Sound Levels:



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29 May 2019
TNM 2.5
Calculated with TNM 2.5

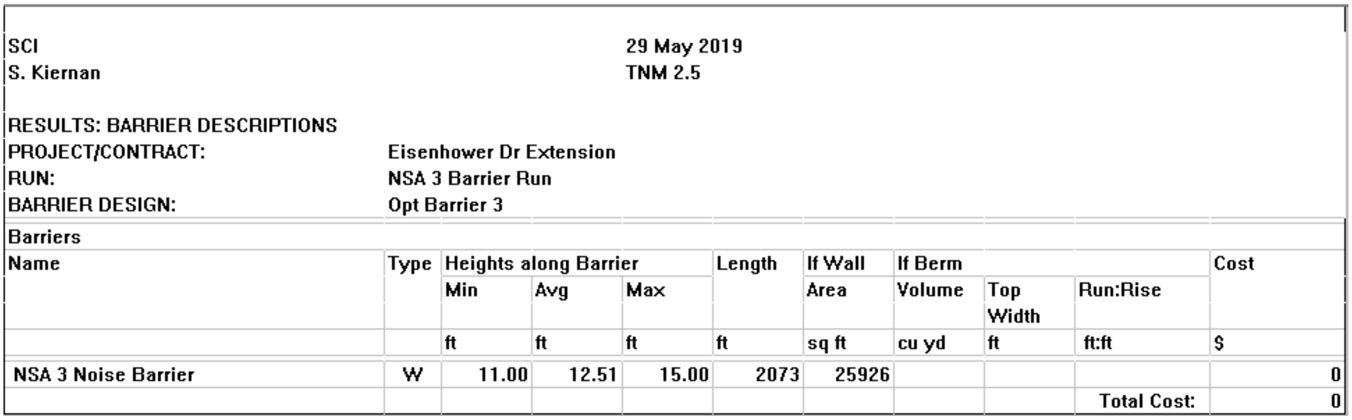
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 3 Barrier Run
BARRIER DESIGN: Opt Barrier 3
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-3-1	109	1	0.0	58.5	66	58.5	10	—	54.0	4.5	8	-3.5
M-3-2	110	1	0.0	57.9	66	57.9	10	—	48.8	9.1	8	1.1
M-3-3	111	1	0.0	49.2	66	49.2	10	—	48.0	1.2	8	-6.8
R-3-1	10	1	0.0	64.4	66	64.4	10	—	64.4	0.0	8	-8.0
R-3-2	11	1	0.0	51.3	66	51.3	10	—	50.9	0.4	8	-7.6
R-3-3	12	1	0.0	53.0	66	53.0	10	—	48.5	4.5	8	-3.5
R-3-4	13	1	0.0	49.2	66	49.2	10	—	46.6	2.6	8	-5.4
R-3-5	14	1	0.0	49.4	66	49.4	10	—	47.2	2.2	8	-5.8
R-3-6	15	1	0.0	54.5	66	54.5	10	—	49.7	4.8	8	-3.2
R-3-7	16	1	0.0	51.8	66	51.8	10	—	50.2	1.6	8	-6.4
R-3-8	17	1	0.0	50.4	66	50.4	10	—	50.2	0.2	8	-7.8
T-1	93	1	0.0	50.5	66	50.5	10	—	49.3	1.2	8	-6.8
T-2	94	1	0.0	51.5	66	51.5	10	—	48.3	3.2	8	-4.8
T-3	95	1	0.0	51.1	66	51.1	10	—	48.3	2.8	8	-5.2
T-4	96	1	0.0	55.3	66	55.3	10	—	48.3	7.0	8	-1.0
T-5	97	1	0.0	59.2	66	59.2	10	—	48.3	10.9	8	2.9
T-6	98	1	0.0	60.8	66	60.8	10	—	48.0	12.8	8	4.8
T-7	99	1	0.0	58.4	66	58.4	10	—	48.5	9.9	8	1.9
T-8	100	1	0.0	55.6	66	55.6	10	—	48.9	6.7	8	-1.3
T-9	101	1	0.0	53.5	66	53.5	10	—	49.0	4.5	8	-3.5
T-10	102	1	0.0	51.8	66	51.8	10	—	48.9	2.9	8	-5.1
T-11	103	1	0.0	51.7	66	51.7	10	—	50.4	1.3	8	-6.7
T-12	104	1	0.0	51.7	66	51.7	10	—	51.2	0.5	8	-7.5
T-13	105	1	0.0	49.1	66	49.1	10	—	48.7	0.4	8	-7.6

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	24	0.0	4.0	12.8
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	4	9.1	10.7	12.8

NSA 3 Barrier Details:



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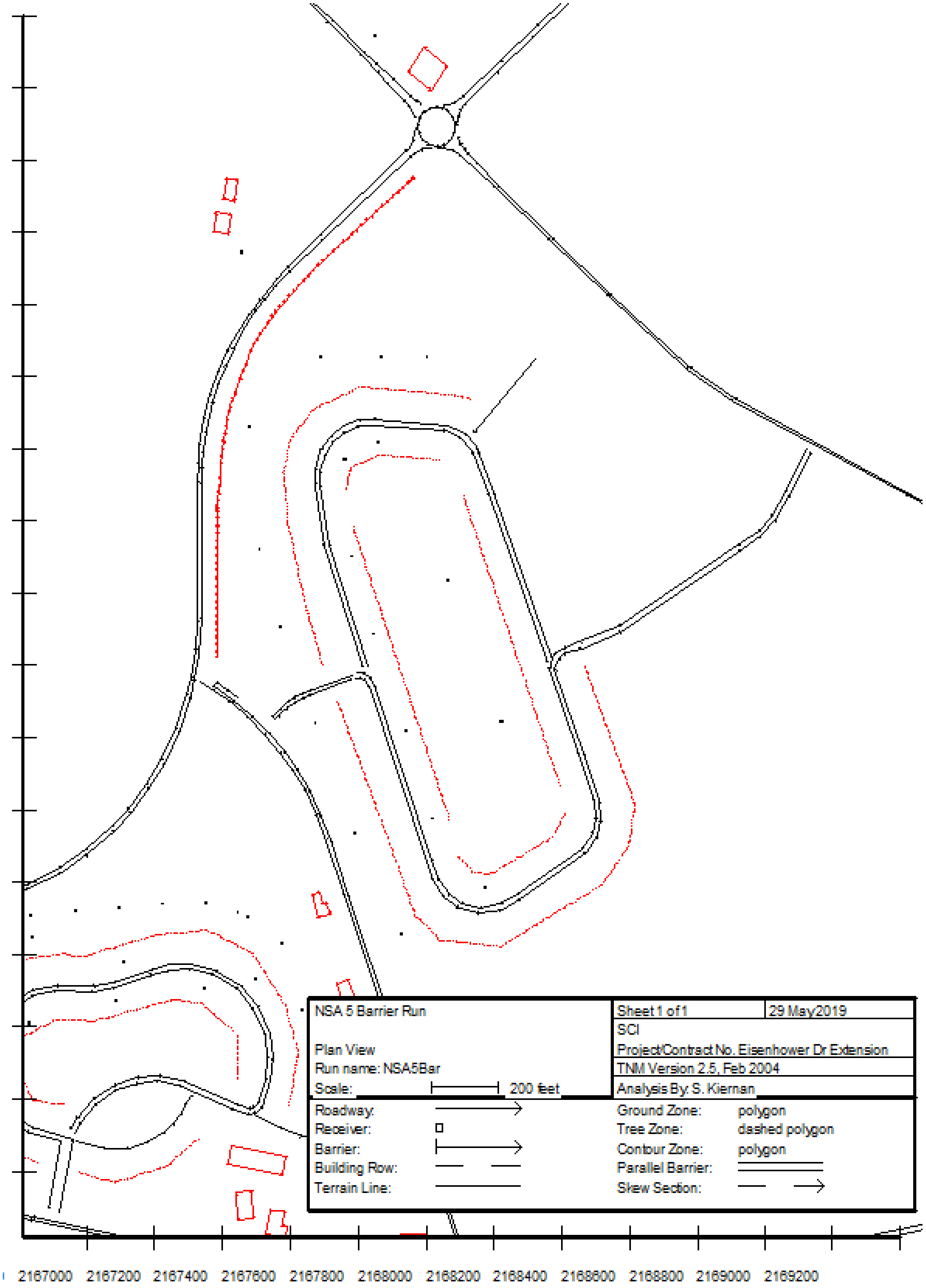
29 May 2019
TNM 2.5

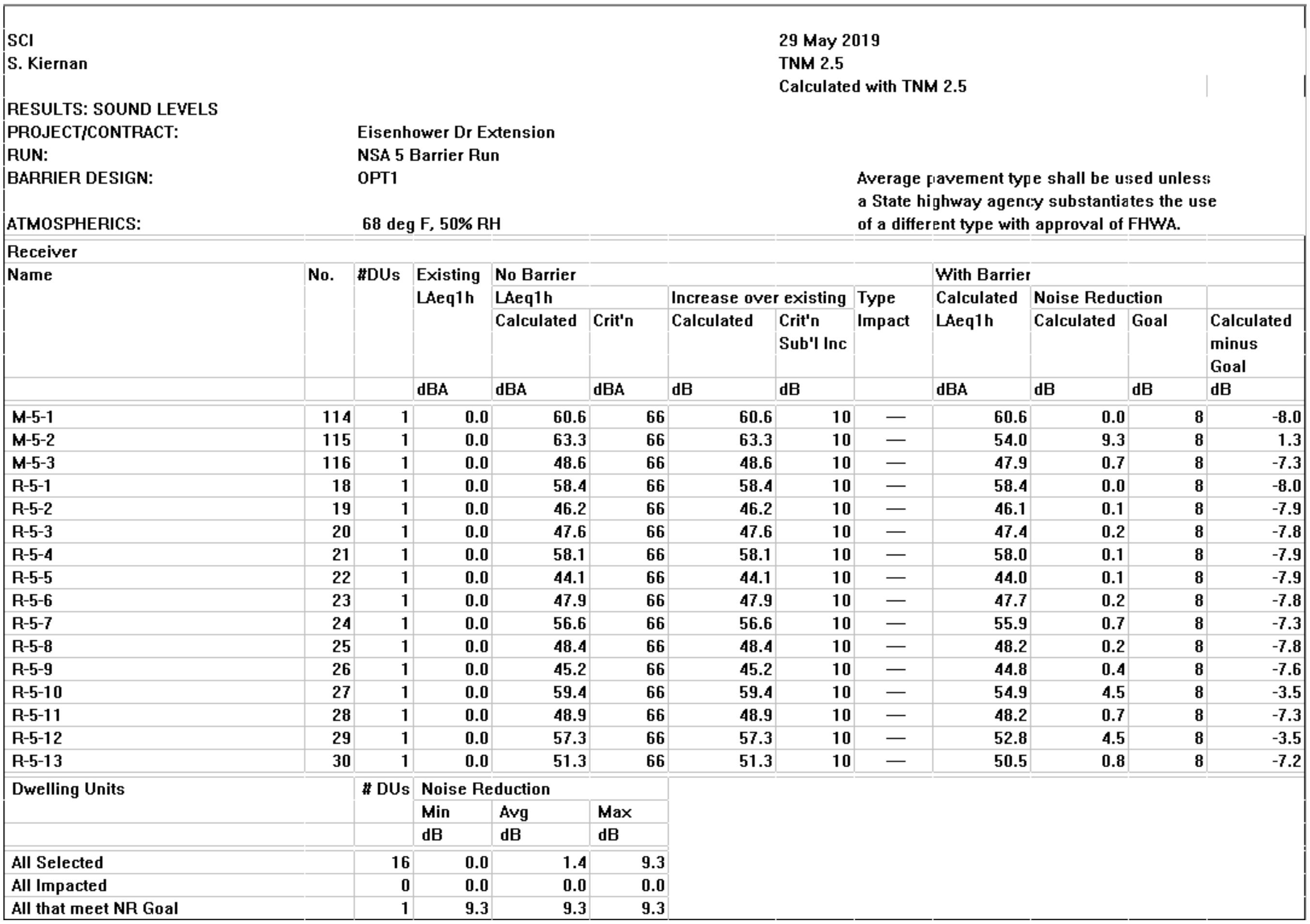
RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 3 Barrier Run
BARRIER DESIGN: Opt Barrier 3

Barriers										
Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 3 Noise Barrier	W	11.00	12.51	15.00	2073	25926				0
									Total Cost:	0

NSA 5 Barrier Plan View



NSA 5 Barrier Sound Levels:



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29 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 5 Barrier Run
BARRIER DESIGN: OPT1

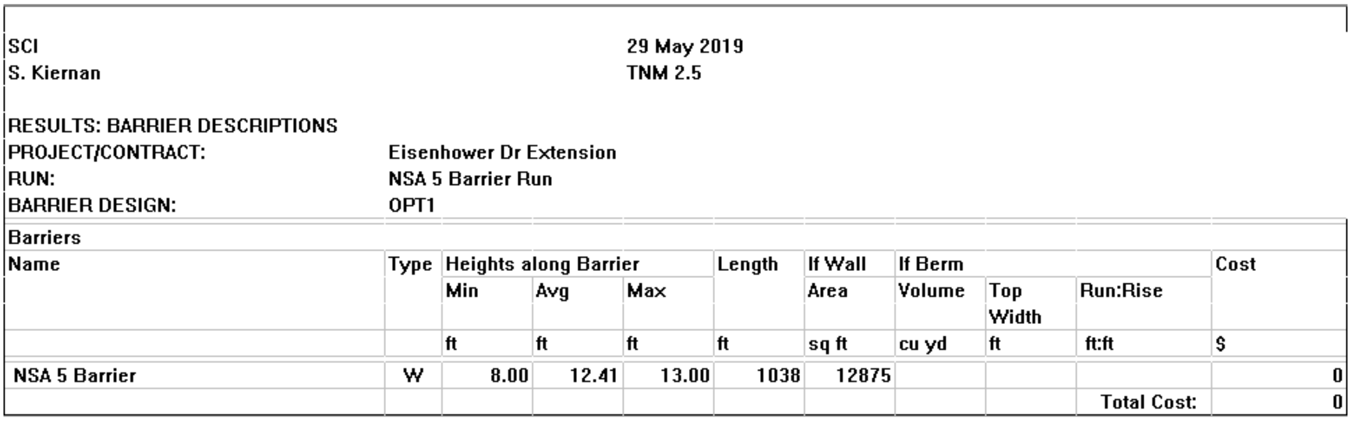
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-5-1	114	1	0.0	60.6	66	60.6	10	—	60.6	0.0	8	-8.0
M-5-2	115	1	0.0	63.3	66	63.3	10	—	54.0	9.3	8	1.3
M-5-3	116	1	0.0	48.6	66	48.6	10	—	47.9	0.7	8	-7.3
R-5-1	18	1	0.0	58.4	66	58.4	10	—	58.4	0.0	8	-8.0
R-5-2	19	1	0.0	46.2	66	46.2	10	—	46.1	0.1	8	-7.9
R-5-3	20	1	0.0	47.6	66	47.6	10	—	47.4	0.2	8	-7.8
R-5-4	21	1	0.0	58.1	66	58.1	10	—	58.0	0.1	8	-7.9
R-5-5	22	1	0.0	44.1	66	44.1	10	—	44.0	0.1	8	-7.9
R-5-6	23	1	0.0	47.9	66	47.9	10	—	47.7	0.2	8	-7.8
R-5-7	24	1	0.0	56.6	66	56.6	10	—	55.9	0.7	8	-7.3
R-5-8	25	1	0.0	48.4	66	48.4	10	—	48.2	0.2	8	-7.8
R-5-9	26	1	0.0	45.2	66	45.2	10	—	44.8	0.4	8	-7.6
R-5-10	27	1	0.0	59.4	66	59.4	10	—	54.9	4.5	8	-3.5
R-5-11	28	1	0.0	48.9	66	48.9	10	—	48.2	0.7	8	-7.3
R-5-12	29	1	0.0	57.3	66	57.3	10	—	52.8	4.5	8	-3.5
R-5-13	30	1	0.0	51.3	66	51.3	10	—	50.5	0.8	8	-7.2

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	16	0.0	1.4	9.3
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	1	9.3	9.3	9.3

NSA 5 Barrier Details:



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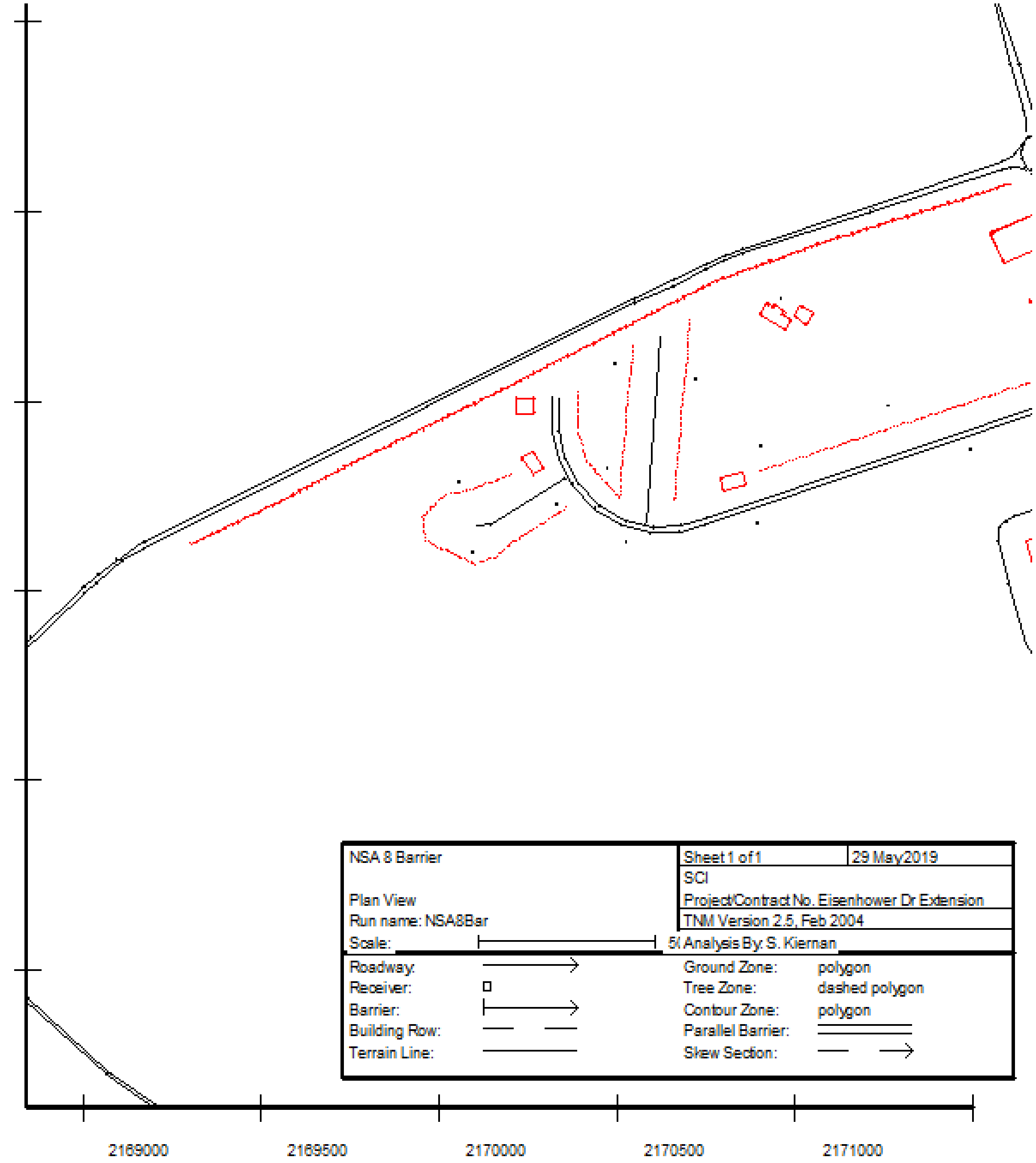
29 May 2019
TNM 2.5

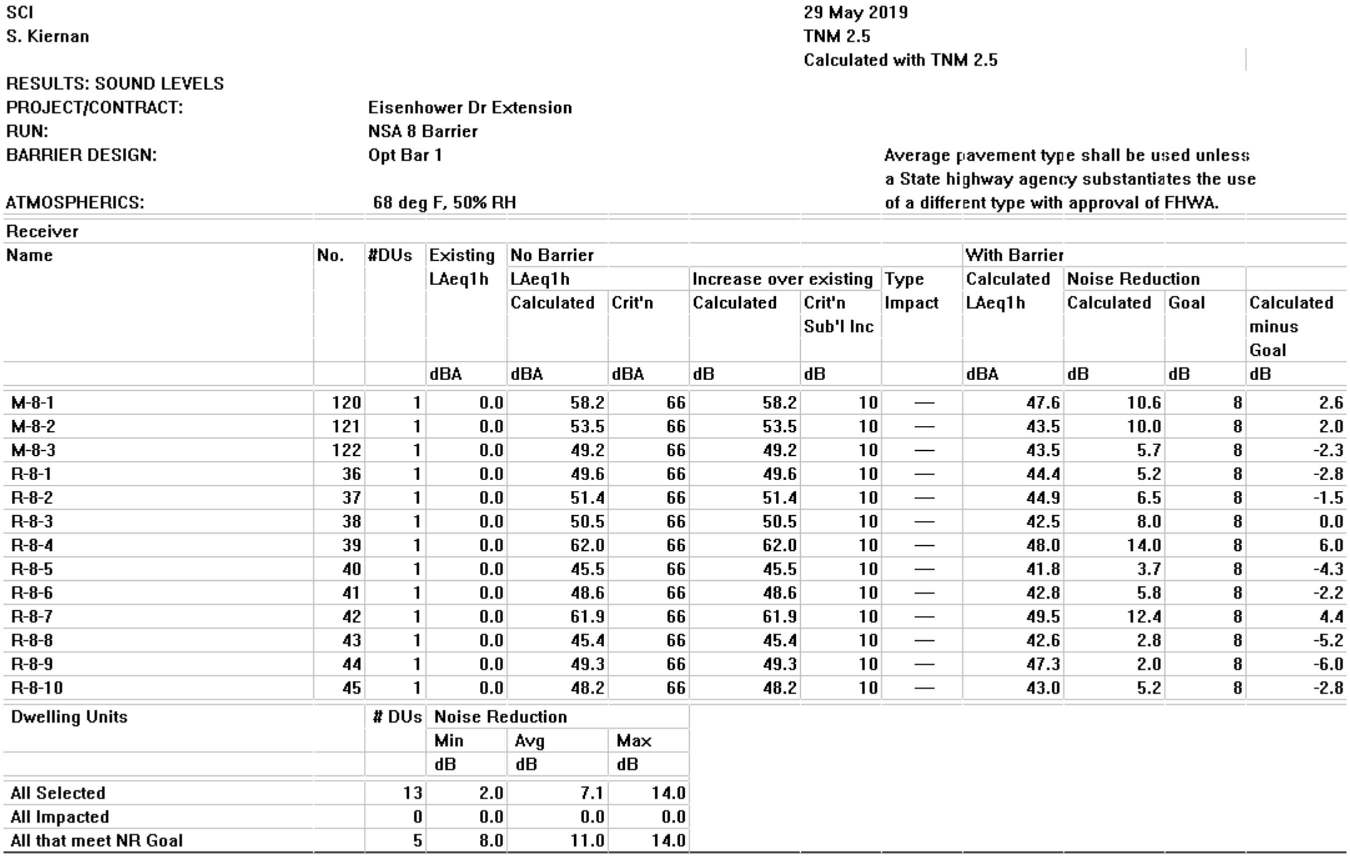
RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 5 Barrier Run
BARRIER DESIGN: OPT1

Barriers										
Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 5 Barrier	W	8.00	12.41	13.00	1038	12875				0
									Total Cost:	0

NSA 8 Barrier Plan View



NSA 8 Barrier Sound Levels:



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29 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 8 Barrier
BARRIER DESIGN: Opt Bar 1

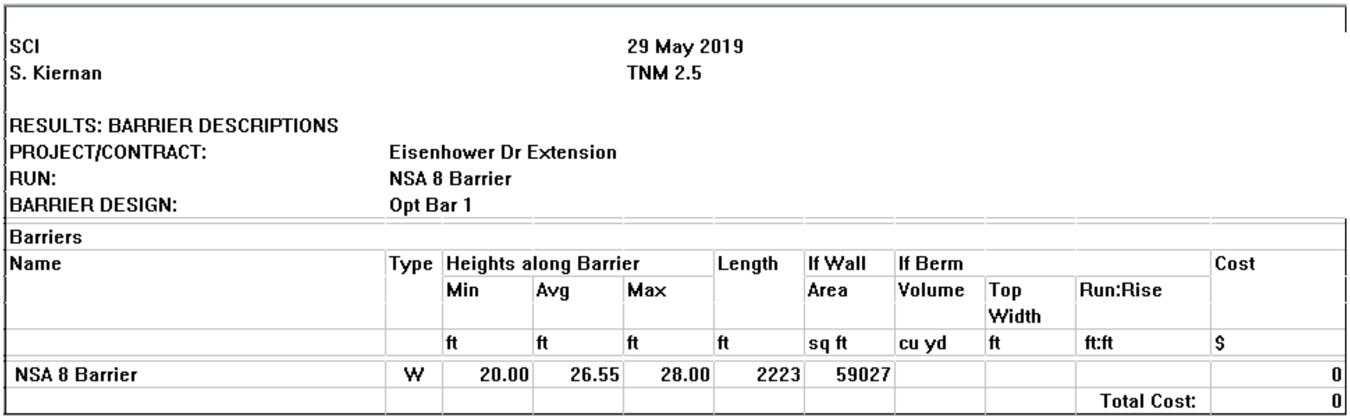
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-8-1	120	1	0.0	58.2	66	58.2	10	—	47.6	10.6	8	2.6
M-8-2	121	1	0.0	53.5	66	53.5	10	—	43.5	10.0	8	2.0
M-8-3	122	1	0.0	49.2	66	49.2	10	—	43.5	5.7	8	-2.3
R-8-1	36	1	0.0	49.6	66	49.6	10	—	44.4	5.2	8	-2.8
R-8-2	37	1	0.0	51.4	66	51.4	10	—	44.9	6.5	8	-1.5
R-8-3	38	1	0.0	50.5	66	50.5	10	—	42.5	8.0	8	0.0
R-8-4	39	1	0.0	62.0	66	62.0	10	—	48.0	14.0	8	6.0
R-8-5	40	1	0.0	45.5	66	45.5	10	—	41.8	3.7	8	-4.3
R-8-6	41	1	0.0	48.6	66	48.6	10	—	42.8	5.8	8	-2.2
R-8-7	42	1	0.0	61.9	66	61.9	10	—	49.5	12.4	8	4.4
R-8-8	43	1	0.0	45.4	66	45.4	10	—	42.6	2.8	8	-5.2
R-8-9	44	1	0.0	49.3	66	49.3	10	—	47.3	2.0	8	-6.0
R-8-10	45	1	0.0	48.2	66	48.2	10	—	43.0	5.2	8	-2.8

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	13	2.0	7.1	14.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	5	8.0	11.0	14.0

NSA 8 Barrier Details:



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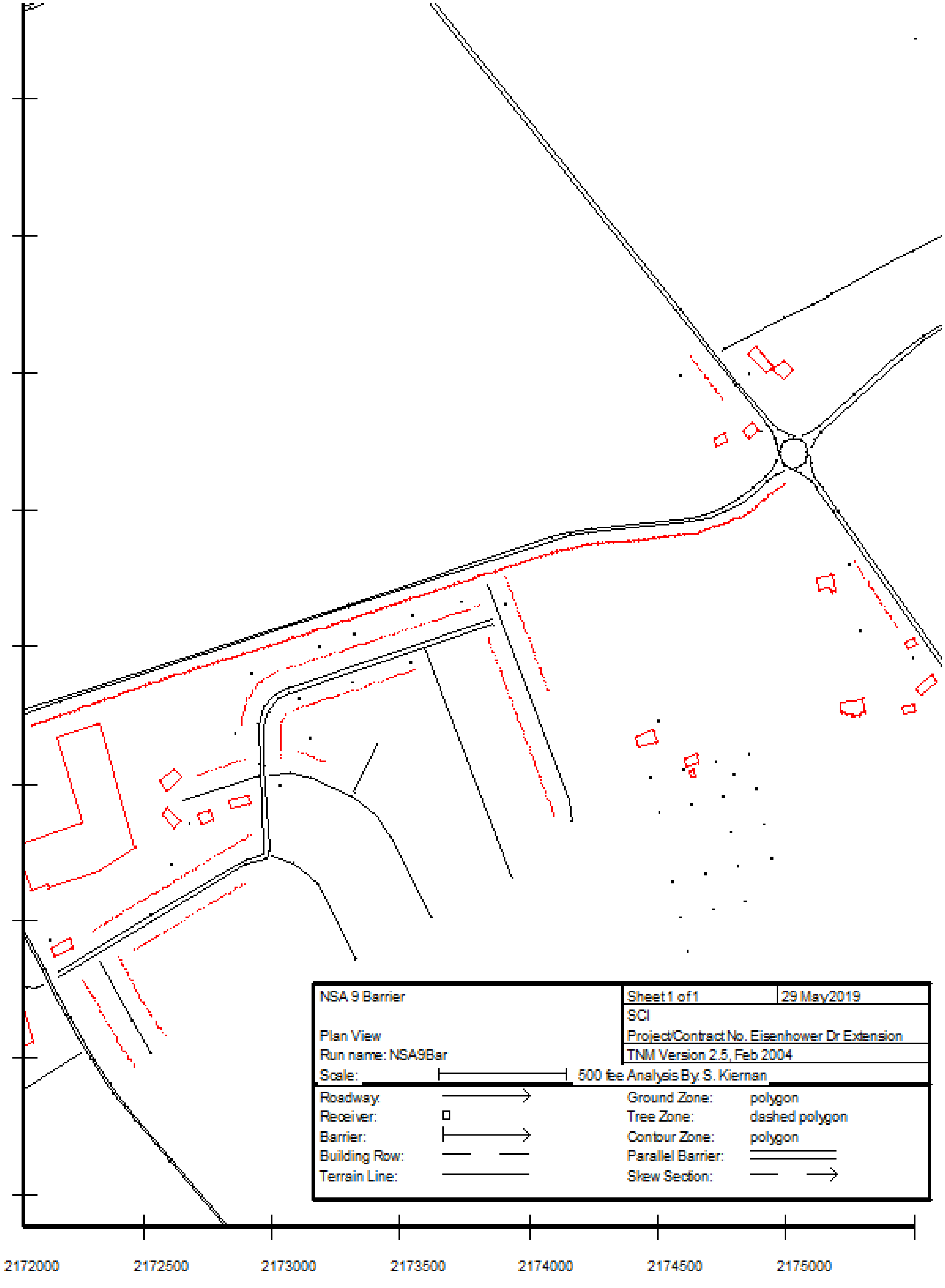
TNM 2.5

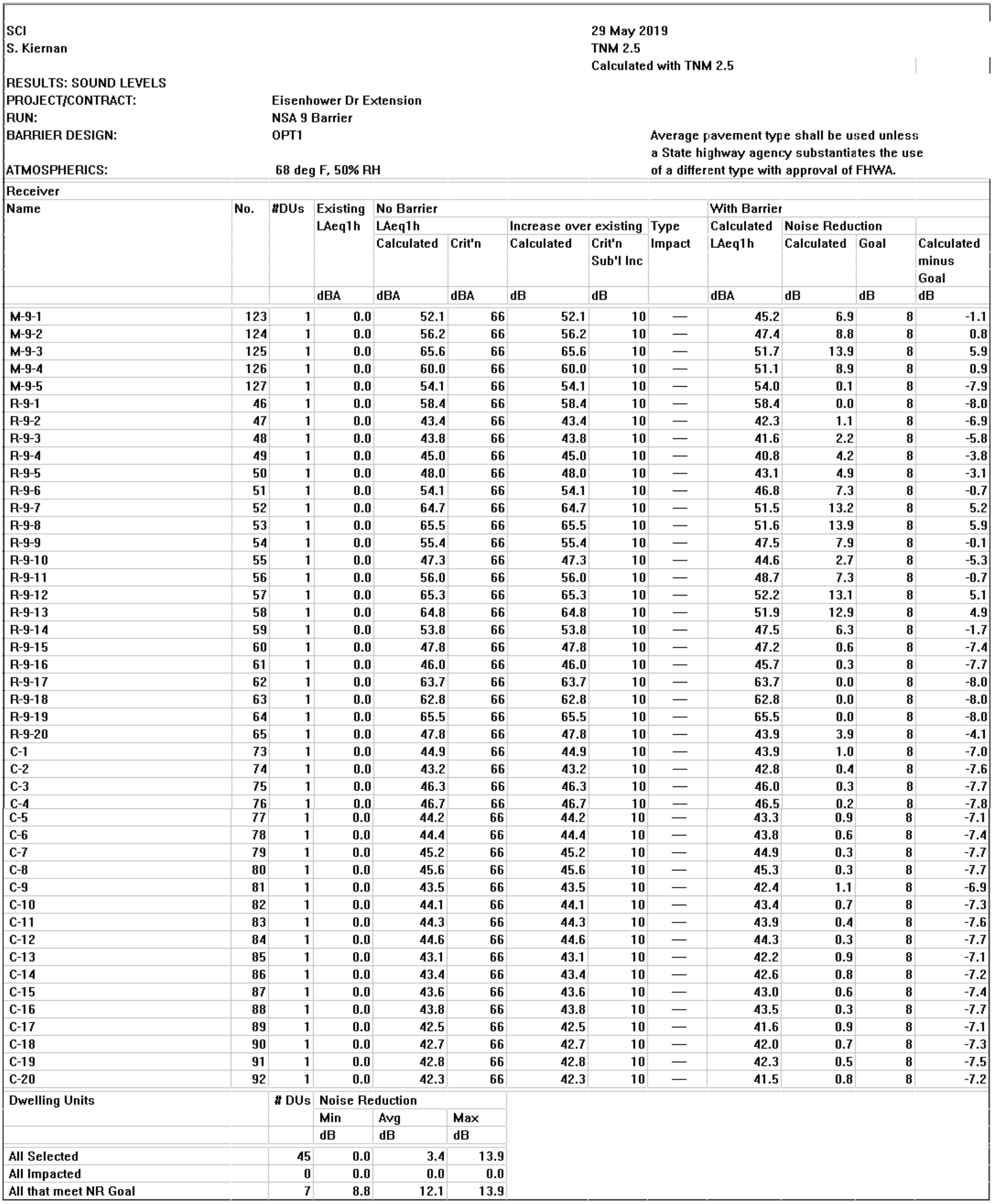
RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 8 Barrier
BARRIER DESIGN: Opt Bar 1

Barriers										
Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 8 Barrier	W	20.00	26.55	28.00	2223	59027				0
									Total Cost:	0

NSA 9 Barrier Plan View



NSA 9 Barrier Sound Levels:



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29 May 2019
TNM 2.5
Calculated with TNM 2.5

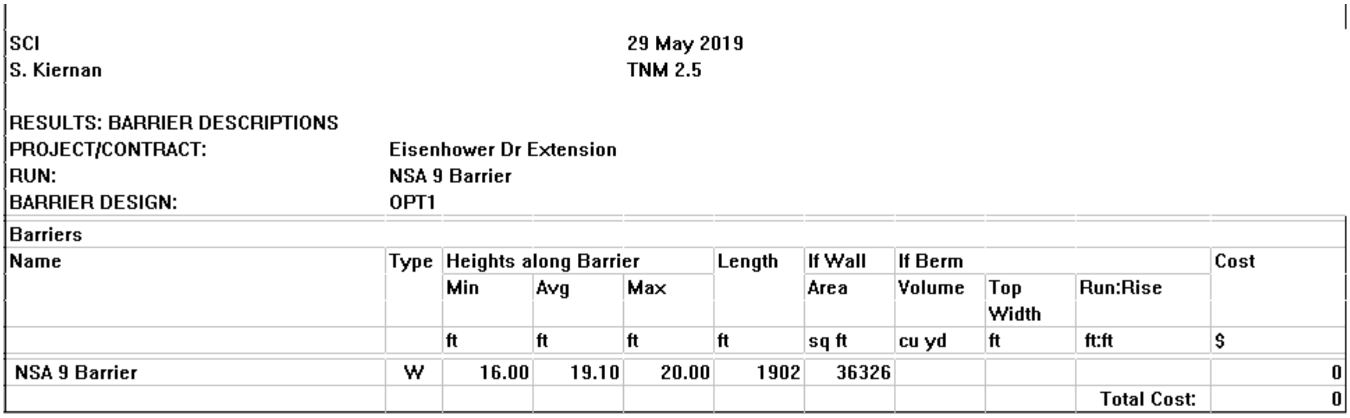
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 9 Barrier
BARRIER DESIGN: OPT1
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-9-1	123	1	0.0	52.1	66	52.1	10	—	45.2	6.9	8	-1.1
M-9-2	124	1	0.0	56.2	66	56.2	10	—	47.4	8.8	8	0.8
M-9-3	125	1	0.0	65.6	66	65.6	10	—	51.7	13.9	8	5.9
M-9-4	126	1	0.0	60.0	66	60.0	10	—	51.1	8.9	8	0.9
M-9-5	127	1	0.0	54.1	66	54.1	10	—	54.0	0.1	8	-7.9
R-9-1	46	1	0.0	58.4	66	58.4	10	—	58.4	0.0	8	-8.0
R-9-2	47	1	0.0	43.4	66	43.4	10	—	42.3	1.1	8	-6.9
R-9-3	48	1	0.0	43.8	66	43.8	10	—	41.6	2.2	8	-5.8
R-9-4	49	1	0.0	45.0	66	45.0	10	—	40.8	4.2	8	-3.8
R-9-5	50	1	0.0	48.0	66	48.0	10	—	43.1	4.9	8	-3.1
R-9-6	51	1	0.0	54.1	66	54.1	10	—	46.8	7.3	8	-0.7
R-9-7	52	1	0.0	64.7	66	64.7	10	—	51.5	13.2	8	5.2
R-9-8	53	1	0.0	65.5	66	65.5	10	—	51.6	13.9	8	5.9
R-9-9	54	1	0.0	55.4	66	55.4	10	—	47.5	7.9	8	-0.1
R-9-10	55	1	0.0	47.3	66	47.3	10	—	44.6	2.7	8	-5.3
R-9-11	56	1	0.0	56.0	66	56.0	10	—	48.7	7.3	8	-0.7
R-9-12	57	1	0.0	65.3	66	65.3	10	—	52.2	13.1	8	5.1
R-9-13	58	1	0.0	64.8	66	64.8	10	—	51.9	12.9	8	4.9
R-9-14	59	1	0.0	53.8	66	53.8	10	—	47.5	6.3	8	-1.7
R-9-15	60	1	0.0	47.8	66	47.8	10	—	47.2	0.6	8	-7.4
R-9-16	61	1	0.0	46.0	66	46.0	10	—	45.7	0.3	8	-7.7
R-9-17	62	1	0.0	63.7	66	63.7	10	—	63.7	0.0	8	-8.0
R-9-18	63	1	0.0	62.8	66	62.8	10	—	62.8	0.0	8	-8.0
R-9-19	64	1	0.0	65.5	66	65.5	10	—	65.5	0.0	8	-8.0
R-9-20	65	1	0.0	47.8	66	47.8	10	—	43.9	3.9	8	-4.1
C-1	73	1	0.0	44.9	66	44.9	10	—	43.9	1.0	8	-7.0
C-2	74	1	0.0	43.2	66	43.2	10	—	42.8	0.4	8	-7.6
C-3	75	1	0.0	46.3	66	46.3	10	—	46.0	0.3	8	-7.7
C-4	76	1	0.0	46.7	66	46.7	10	—	46.5	0.2	8	-7.8
C-5	77	1	0.0	44.2	66	44.2	10	—	43.3	0.9	8	-7.1
C-6	78	1	0.0	44.4	66	44.4	10	—	43.8	0.6	8	-7.4
C-7	79	1	0.0	45.2	66	45.2	10	—	44.9	0.3	8	-7.7
C-8	80	1	0.0	45.6	66	45.6	10	—	45.3	0.3	8	-7.7
C-9	81	1	0.0	43.5	66	43.5	10	—	42.4	1.1	8	-6.9
C-10	82	1	0.0	44.1	66	44.1	10	—	43.4	0.7	8	-7.3
C-11	83	1	0.0	44.3	66	44.3	10	—	43.9	0.4	8	-7.6
C-12	84	1	0.0	44.6	66	44.6	10	—	44.3	0.3	8	-7.7
C-13	85	1	0.0	43.1	66	43.1	10	—	42.2	0.9	8	-7.1
C-14	86	1	0.0	43.4	66	43.4	10	—	42.6	0.8	8	-7.2
C-15	87	1	0.0	43.6	66	43.6	10	—	43.0	0.6	8	-7.4
C-16	88	1	0.0	43.8	66	43.8	10	—	43.5	0.3	8	-7.7
C-17	89	1	0.0	42.5	66	42.5	10	—	41.6	0.9	8	-7.1
C-18	90	1	0.0	42.7	66	42.7	10	—	42.0	0.7	8	-7.3
C-19	91	1	0.0	42.8	66	42.8	10	—	42.3	0.5	8	-7.5
C-20	92	1	0.0	42.3	66	42.3	10	—	41.5	0.8	8	-7.2

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	45	0.0	3.4	13.9
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	7	8.8	12.1	13.9

NSA 9 Barrier Details:



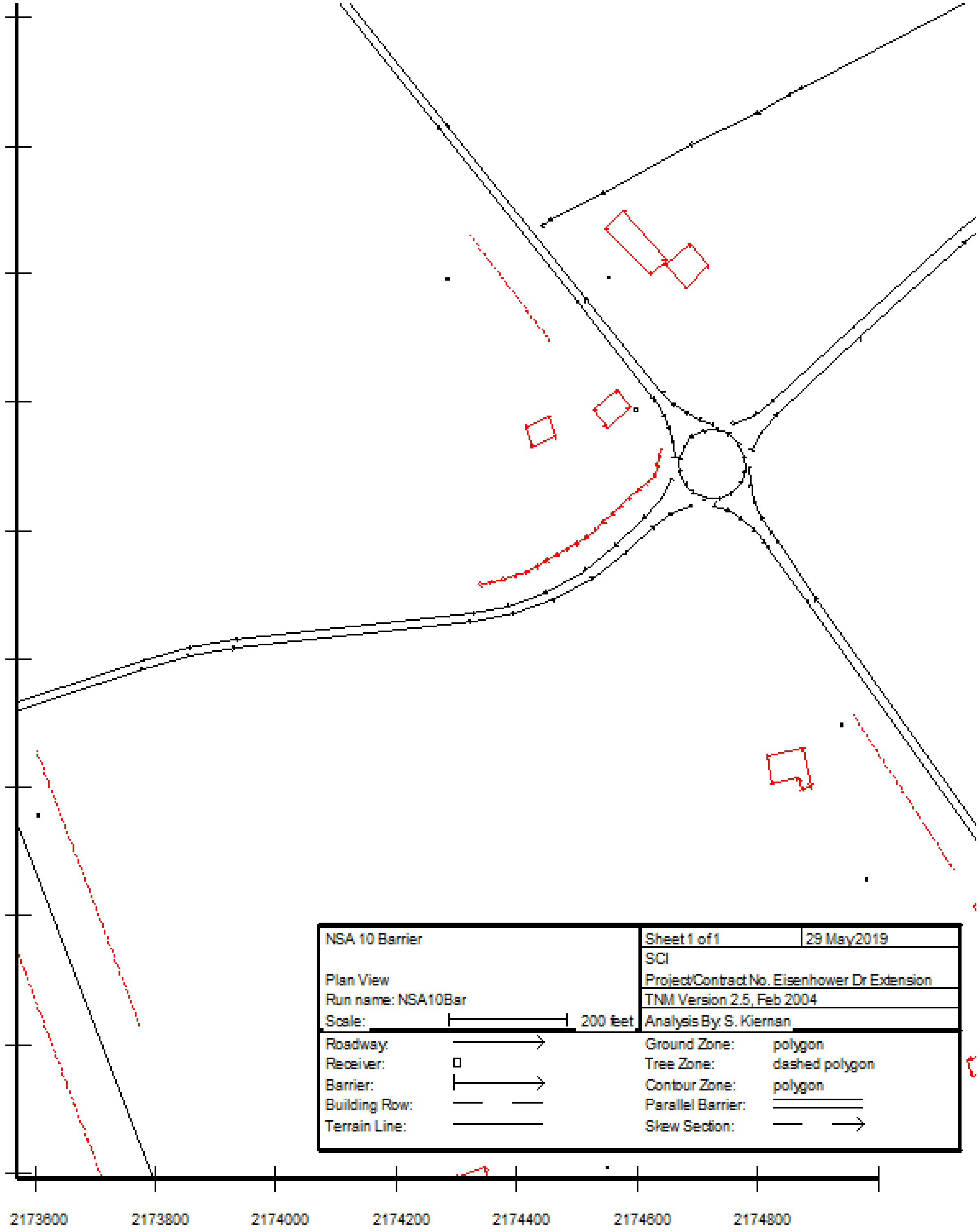
SCI 29 May 2019
S. Kiernan TNM 2.5

RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 9 Barrier
BARRIER DESIGN: OPT1

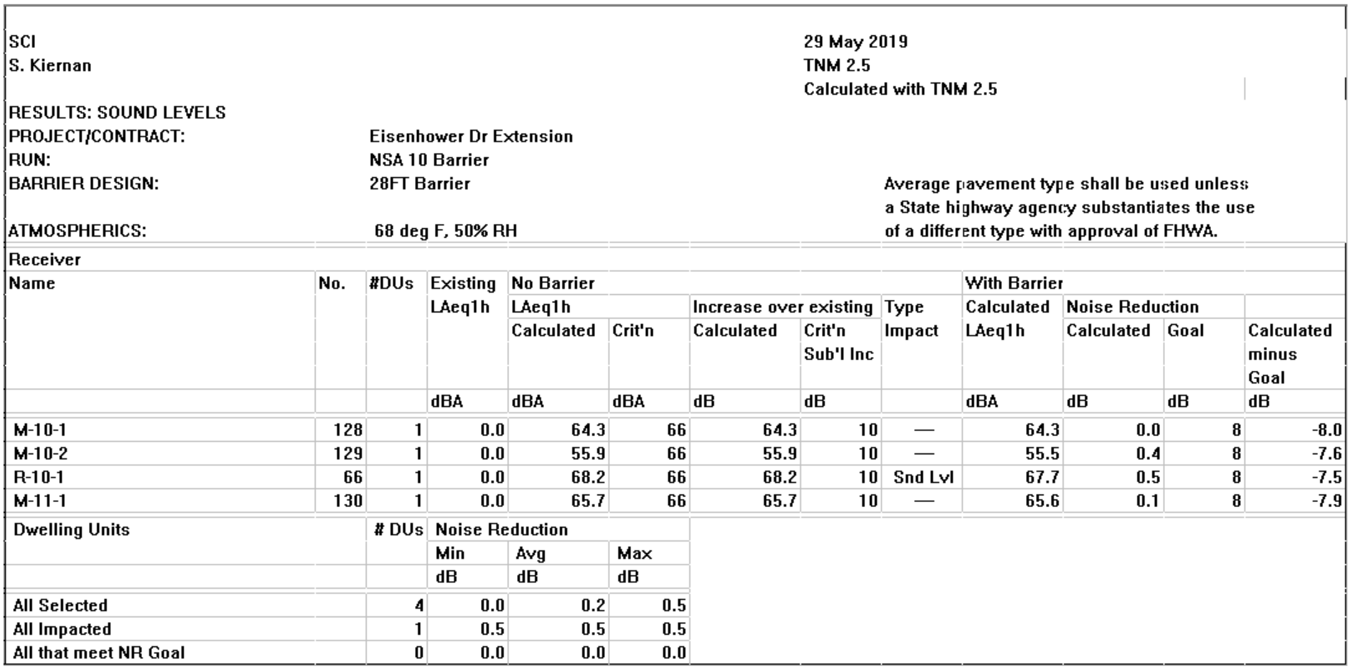
Barriers

Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 9 Barrier	W	16.00	19.10	20.00	1902	36326				0
									Total Cost:	0

NSA 10 Barrier Plan View



NSA 10 Barrier Sound Levels:



SCI — 29 May 2019
S. Kiernan — TNM 2.5
Calculated with TNM 2.5

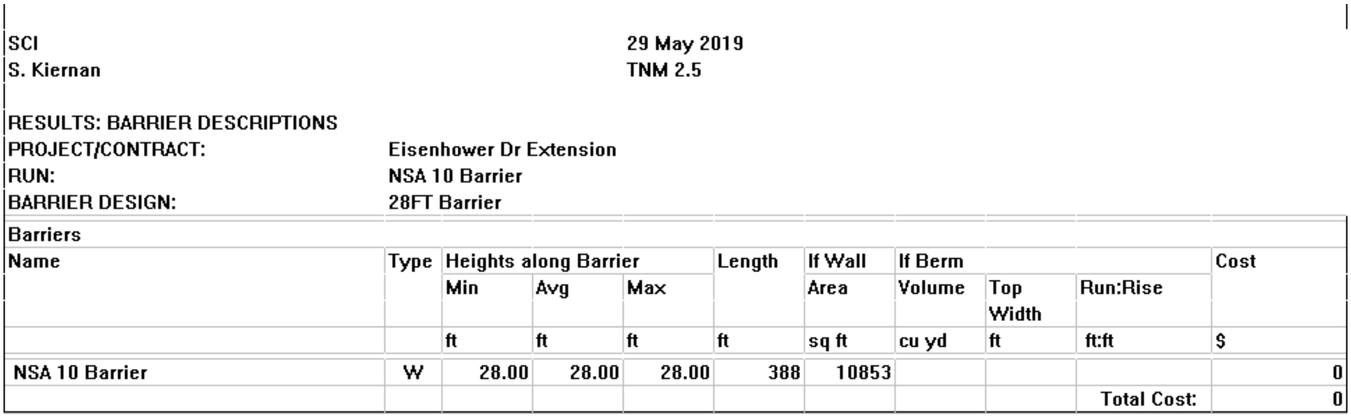
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 10 Barrier
BARRIER DESIGN: 28FT Barrier
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-10-1	128	1	0.0	64.3	66	64.3	10	—	64.3	0.0	8	-8.0
M-10-2	129	1	0.0	55.9	66	55.9	10	—	55.5	0.4	8	-7.6
R-10-1	66	1	0.0	68.2	66	68.2	10	Snd Lvl	67.7	0.5	8	-7.5
M-11-1	130	1	0.0	65.7	66	65.7	10	—	65.6	0.1	8	-7.9

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.2	0.5
All Impacted	1	0.5	0.5	0.5
All that meet NR Goal	0	0.0	0.0	0.0

NSA 10 Barrier Details:

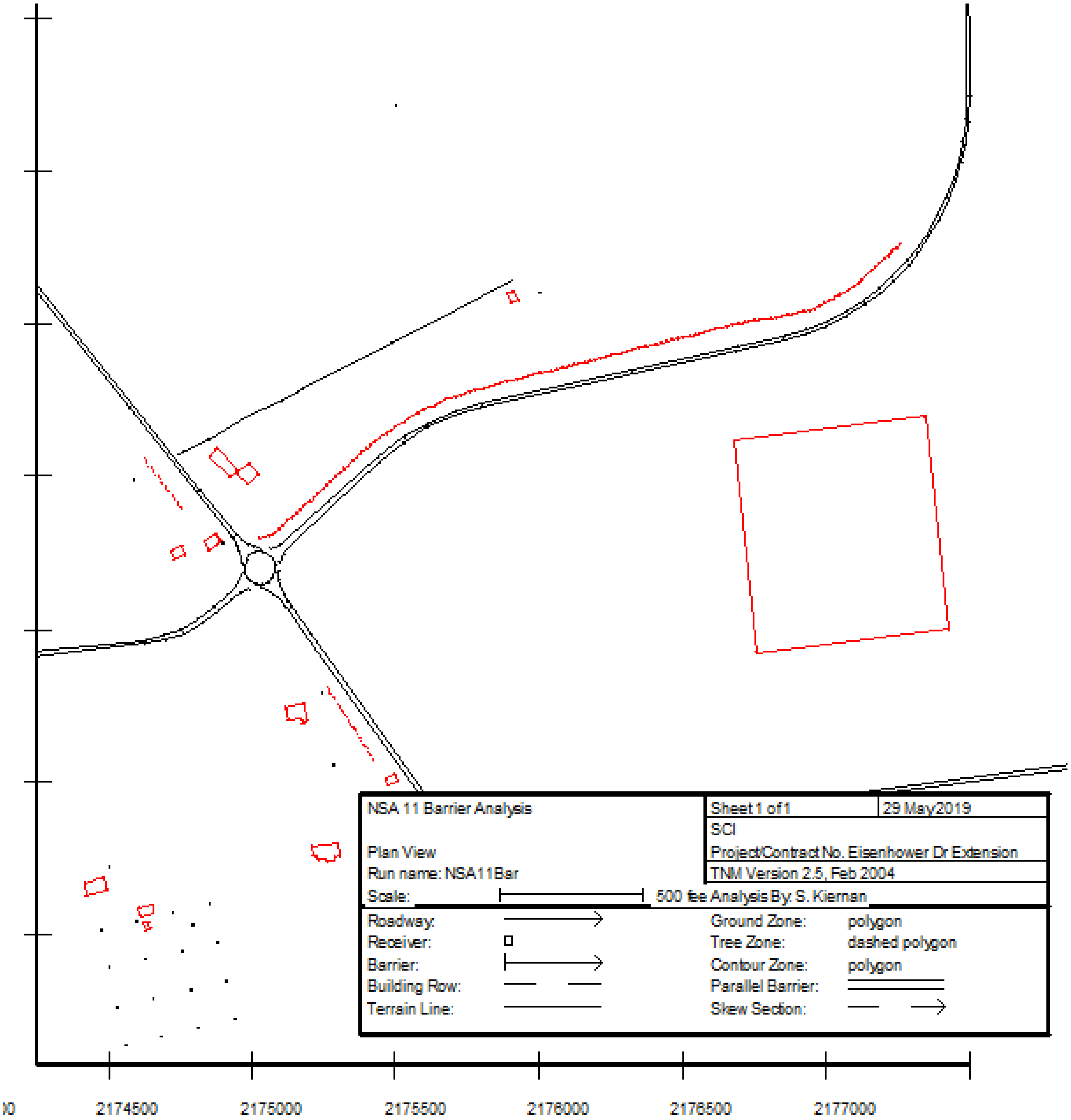


SCI — 29 May 2019
S. Kiernan — TNM 2.5

RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 10 Barrier
BARRIER DESIGN: 28FT Barrier

Barriers										
Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 10 Barrier	W	28.00	28.00	28.00	388	10853				0
									Total Cost:	0

NSA 11 Barrier Plan View


NSA 11 Barrier Analysis

Sheet 1 of 1 | 29 May2019

SCI

Project/Contract No. Eisenhower Dr Extension

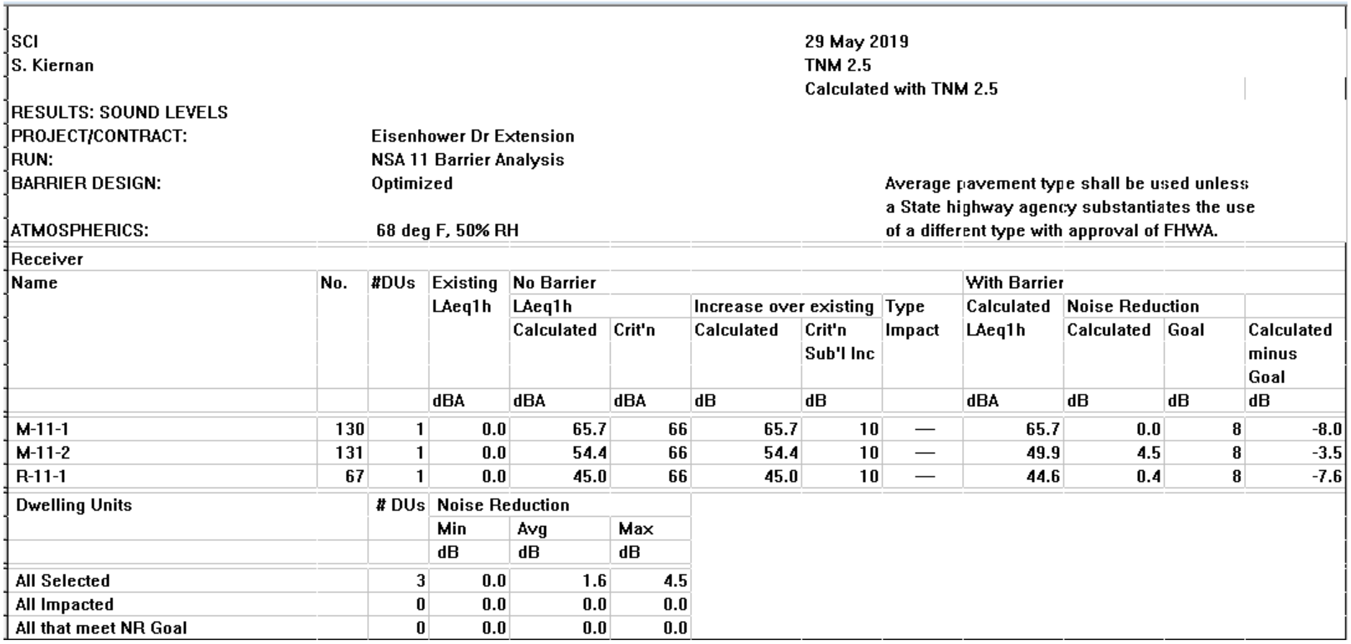
TNM Version 2.5, Feb 2004

Plan View

Run name: NSA11Bar

Scale: 500 fee Analysis By: S. Kiernan

NSA 11 Barrier Sound Levels:



SCI
S. Kiernan

29 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 11 Barrier Analysis
BARRIER DESIGN: Optimized

ATMOSPHERICS: 68 deg F, 50% RH

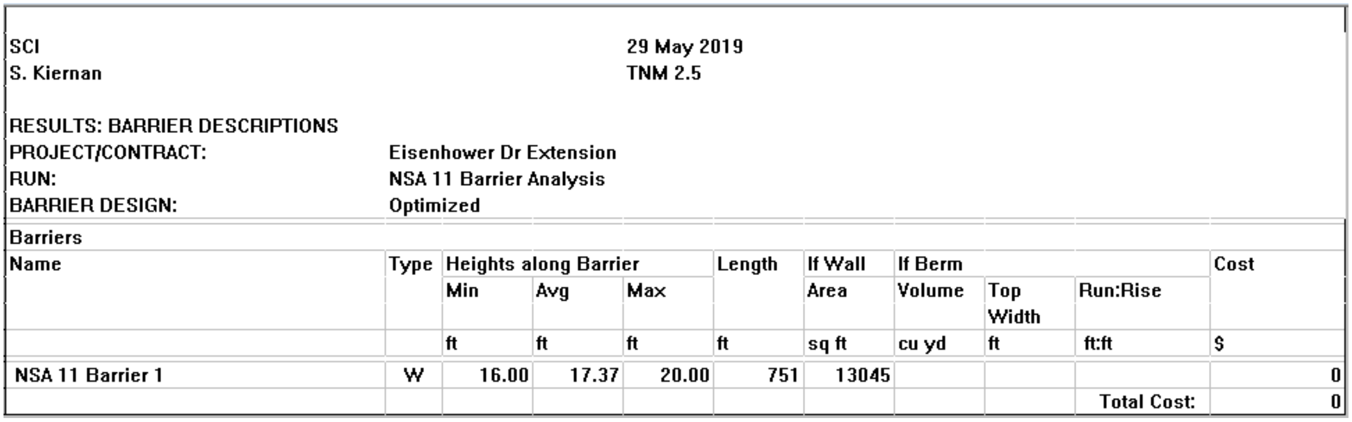
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver

Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-11-1	130	1	0.0	65.7	66	65.7	10	—	65.7	0.0	8	-8.0
M-11-2	131	1	0.0	54.4	66	54.4	10	—	49.9	4.5	8	-3.5
R-11-1	67	1	0.0	45.0	66	45.0	10	—	44.6	0.4	8	-7.6

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	1.6	4.5
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

NSA 11 Barrier Details:



SCI
S. Kiernan

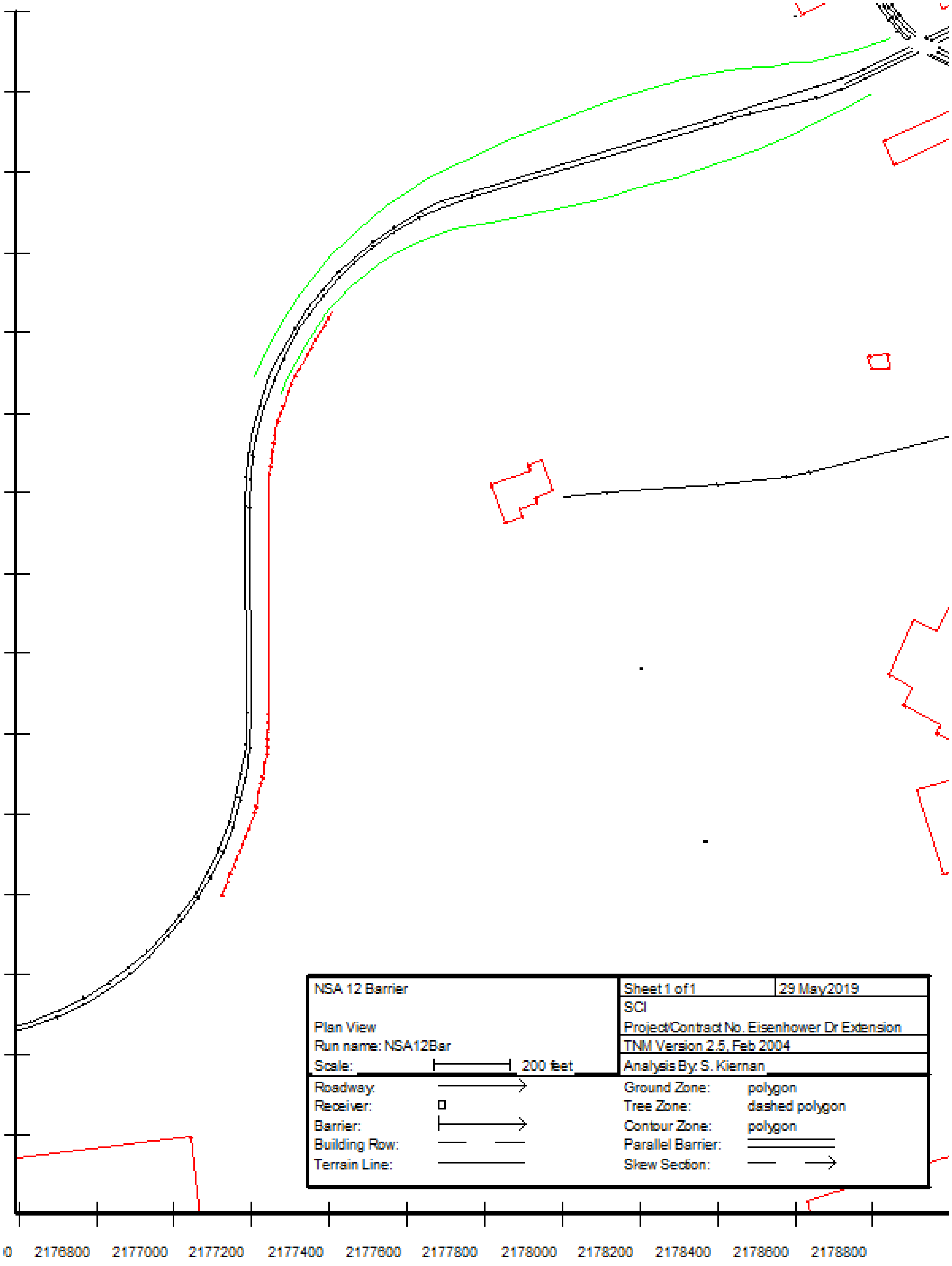
29 May 2019
TNM 2.5

RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 11 Barrier Analysis
BARRIER DESIGN: Optimized

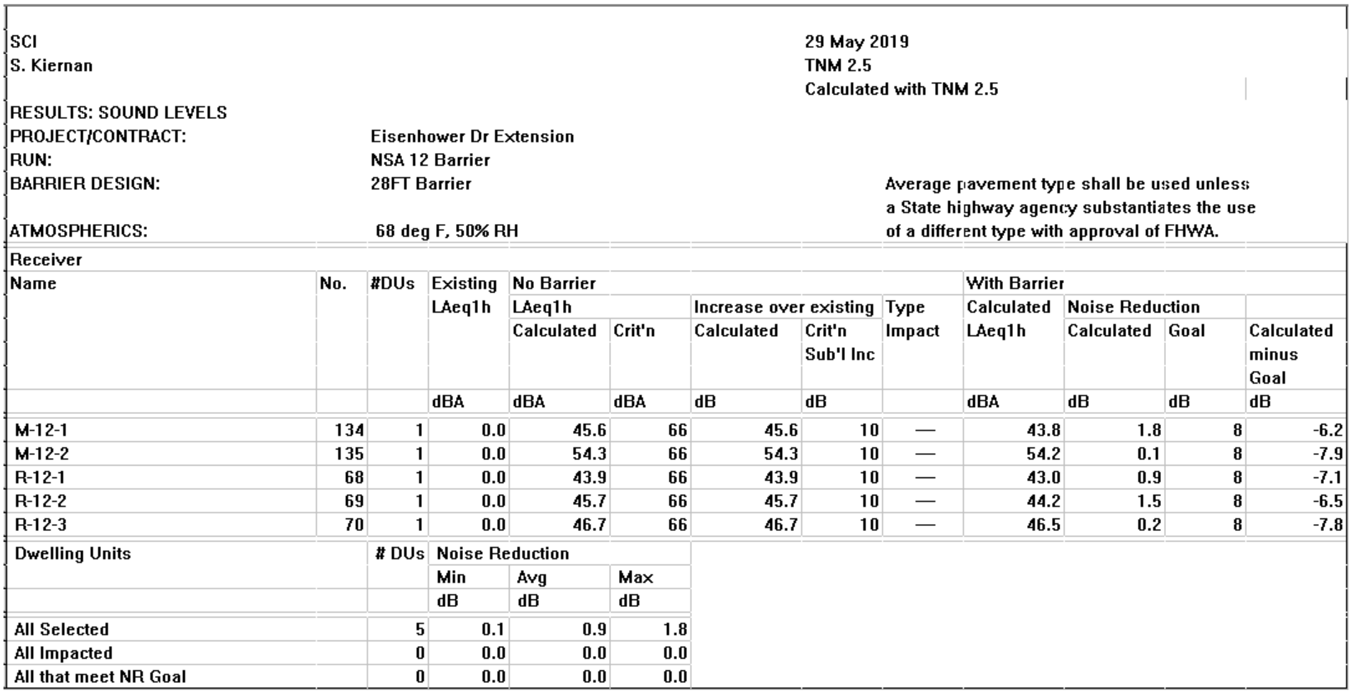
Barriers

Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 11 Barrier 1	W	16.00	17.37	20.00	751	13045				0
									Total Cost:	0

NSA 12 Barrier Plan View



NSA 12 Barrier Sound Levels:



SCI
S. Kiernan

29 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 12 Barrier
BARRIER DESIGN: 28FT Barrier

ATMOSPHERICS: 68 deg F, 50% RH

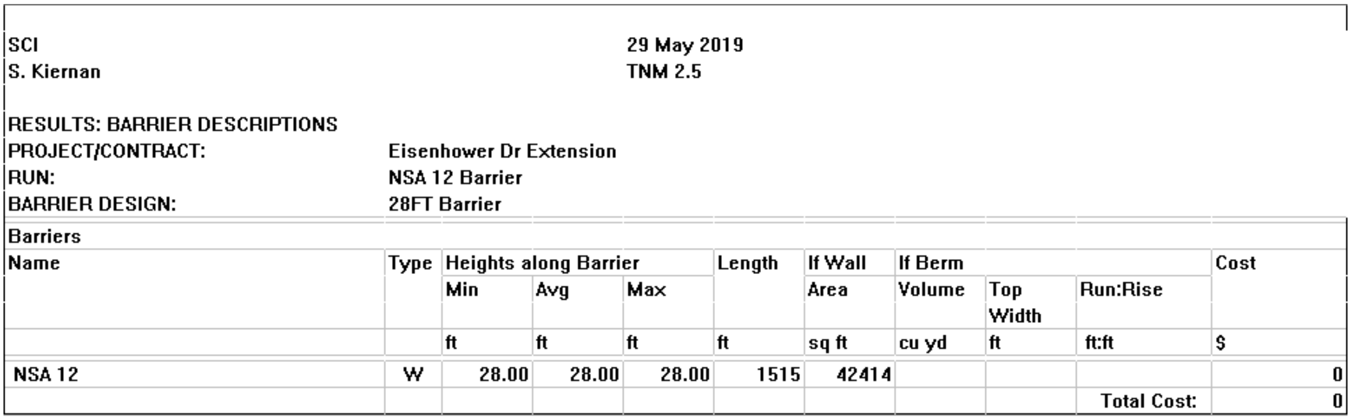
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver

Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M-12-1	134	1	0.0	45.6	66	45.6	10	—	43.8	1.8	8	-6.2
M-12-2	135	1	0.0	54.3	66	54.3	10	—	54.2	0.1	8	-7.9
R-12-1	68	1	0.0	43.9	66	43.9	10	—	43.0	0.9	8	-7.1
R-12-2	69	1	0.0	45.7	66	45.7	10	—	44.2	1.5	8	-6.5
R-12-3	70	1	0.0	46.7	66	46.7	10	—	46.5	0.2	8	-7.8

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	5	0.1	0.9	1.8
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

NSA 12 Barrier Details:



SCI
S. Kiernan

29 May 2019
TNM 2.5

RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: NSA 12 Barrier
BARRIER DESIGN: 28FT Barrier

Barriers

Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
NSA 12	W	28.00	28.00	28.00	1515	42414				0
									Total Cost:	0

Appendix G

EQUIPMENT CALIBRATION CERTIFICATES

Calibration Certificate

Certificate Number 2019001763

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number 377B02
Serial Number 146747
Test Results **Pass**
Initial Condition AS RECEIVED same as shipped
Description 1/2 inch Microphone - FF - 0V

Procedure Number D0001.8387
Technician Abraham Ortega
Calibration Date 12 Feb 2019
Calibration Due 12 Feb 2020
Temperature 23.8 °C ± 0.01 °C
Humidity 26.8 %RH ± 0.5 %RH
Static Pressure 101.51 kPa ± 0.03 kPa

Evaluation Method Tested electrically using an electrostatic actuator.

Compliance Standards Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	**Cal Date**	**Cal Due**	**Cal Standard**
Larson Davis Model 2900 Real Time Analyzer	07/02/2018	07/02/2019	001230
Microphone Calibration System	08/28/2018	08/28/2019	001233
1/2" Preamplifier	12/17/2018	12/17/2019	001274
Agilent 34401A DMM	12/07/2018	12/07/2019	001329
Larson Davis CAL250 Acoustic Calibrator	01/04/2019	01/04/2020	003030
1/2" Preamplifier	04/12/2018	04/12/2019	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/22/2018	08/22/2019	006507
1/2 inch Microphone - RI - 200V	05/10/2018	05/10/2019	006510
1/2 inch Microphone - RI - 200V	08/09/2018	08/09/2019	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/22/2018	08/22/2019	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/13/2018	08/11/2019	006531

ACCREDITED
Cert. #3622.01

Calibration Certificate

Certificate Number 2019001768

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	377B20
Serial Number	149322
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	1/2 inch Microphone - RI - 0V

Procedure Number	D0001.8387		
Technician	Abraham Ortega		
Calibration Date	12 Feb 2019		
Calibration Due	12 Feb 2020		
Temperature	23.7	°C	± 0.01 °C
Humidity	26.7	%RH	± 0.5 %RH
Static Pressure	101.63	kPa	± 0.03 kPa

Evaluation Method	Tested electrically using an electrostatic actuator.
Compliance Standards	Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

This report may not be reproduced, except in full, unless permission for the publication of an approved abstract is obtained in writing from the organization issuing this report.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	07/02/2018	07/02/2019	001230
Microphone Calibration System	08/28/2018	08/28/2019	001233
1/2" Preamplifier	12/17/2018	12/17/2019	001274
Agilent 34401A DMM	12/07/2018	12/07/2019	001329
Larson Davis CAL250 Acoustic Calibrator	01/04/2019	01/04/2020	003030
1/2" Preamplifier	04/12/2018	04/12/2019	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/22/2018	08/22/2019	006507
1/2 inch Microphone - RI - 200V	05/10/2018	05/10/2019	006510
1/2 inch Microphone - RI - 200V	08/09/2018	08/09/2019	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/22/2018	08/22/2019	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/13/2018	08/11/2019	006531

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED
Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2019001813

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	LxT SE
Serial Number	0003982
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Sound Expert LxT Class 1 Sound Level Meter Firmware Revision: 2.302

Procedure Number	D0001.8384		
Technician	Ron Harris		
Calibration Date	13 Feb 2019		
Calibration Due	13 Feb 2020		
Temperature	22.98	°C	± 0.25 °C
Humidity	50.9	%RH	± 2.0 %RH
Static Pressure	85.39	kPa	± 0.13 kPa

Evaluation Method

Tested with:

Larson Davis PRMLxT1L. S/N 035956
PCB 377B20. S/N 149322
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 μPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

Cert. #3622.01

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 μPa

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2018-09-19	2019-09-19	001250
SRS DS360 Ultra Low Distortion Generator	2018-06-21	2019-06-21	006311
Hart Scientific 2626-H Temperature Probe	2018-08-19	2019-08-19	006798
Larson Davis CAL200 Acoustic Calibrator	2018-07-24	2019-07-24	007027
Larson Davis Model 831	2018-02-28	2019-02-28	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2018-03-07	2019-03-07	007185

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.01	113.80	114.20	0.14	Pass

As Received Level: 111.80
Adjusted Level: 114.01

-- End of measurement results--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.16	-0.20	-1.20	0.80	0.23	Pass
1000	0.05	0.00	-0.70	0.70	0.23	Pass
8000	-2.71	-3.00	-5.50	-1.50	0.32	Pass

-- End of measurement results--

Calibration Certificate

Certificate Number 2019001789

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	LxT SE
Serial Number	0003982
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Sound Expert LxT Class 1 Sound Level Meter Firmware Revision: 2.302

Procedure Number	D0001.8378		
Technician	Ron Harris		
Calibration Date	12 Feb 2019		
Calibration Due	12 Feb 2020		
Temperature	23.54	°C	± 0.25 °C
Humidity	49.2	%RH	± 2.0 %RH
Static Pressure	86.31	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRMLxT1L S/N 035956 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 μPa assuming a microphone sensitivity of 23.6 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1
IEC 60804:2000 Type 1
IEC 61252:2002
IEC 61260:2001 Class 1
IEC 61672:2013 Class 1

ANSI S1.4-2014 Class 1
ANSI S1.4 (R2006) Type 1
ANSI S1.11 (R2009) Class 1
ANSI S1.25 (R2007)
ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 μPa

ACCREDITED
Cert. #3622.01

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Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-H Temperature Probe	2018-08-19	2019-08-19	006798
SRS DS360 Ultra Low Distortion Generator	2019-01-24	2020-01-24	007118

Calibration Certificate

Certificate Number 2019001791

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	PRM831
Serial Number	029580
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Larson Davis 1/2" Preamplifier for Model 831 Type 1

Procedure Number	D0001.8383		
Technician	Ron Harris		
Calibration Date	12 Feb 2019		
Calibration Due	12 Feb 2020		
Temperature	23.41	°C	± 0.01 °C
Humidity	48.8	%RH	± 0.5 %RH
Static Pressure	86.31	kPa	± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 μPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	03/07/2018	03/07/2019	003003
Hart Scientific 2626-H Temperature Probe	08/19/2018	08/19/2019	006798
Agilent 34401A DMM	06/29/2018	06/29/2019	007165
SRS DS360 Ultra Low Distortion Generator	10/04/2018	10/04/2019	007167

Calibration Certificate

Certificate Number 2019001788

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	PRMLxT1L
Serial Number	035956
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Larson Davis 1/2" Preamplifier for LxT Class 1 -1 dB

Procedure Number	D0001.8383		
Technician	Ron Harris		
Calibration Date	12 Feb 2019		
Calibration Due	12 Feb 2020		
Temperature	23.49	°C	± 0.01 °C
Humidity	49	%RH	± 0.5 %RH
Static Pressure	86.31	kPa	± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 μPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	03/07/2018	03/07/2019	003003
Hart Scientific 2626-H Temperature Probe	08/19/2018	08/19/2019	006798
Agilent 34401A DMM	06/29/2018	06/29/2019	007165
SRS DS360 Ultra Low Distortion Generator	10/04/2018	10/04/2019	007167

Calibration Certificate

Certificate Number 2019001812

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	831
Serial Number	0003758
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Larson Davis Model 831 Class 1 Sound Level Meter Firmware Revision: 2.314

Procedure Number	D0001.8384		
Technician	Ron Harris		
Calibration Date	13 Feb 2019		
Calibration Due	13 Feb 2020		
Temperature	23.05	°C	± 0.25 °C
Humidity	50.2	%RH	± 2.0 %RH
Static Pressure	85.39	kPa	± 0.13 kPa

Evaluation Method

Tested with:
Larson Davis PRM831. S/N 029580
PCB 377B02. S/N 146747
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 μPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis Model 831 Sound Level Meter Manual, I831.01 Rev O, 2016-09-19

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to

1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 μPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 successfully completed by Physikalisch-Technische Bundesanstalt (PTB) on 2016-02-24 certificate number DE-15-M-PTB-0056.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organization responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013 / ANSI/ASA S1.4-2014/Part 2, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1; the sound level meter submitted for testing conforms to the class 1specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2018-09-19	2019-09-19	001250
SRS DS360 Ultra Low Distortion Generator	2018-06-21	2019-06-21	006311
Hart Scientific 2626-H Temperature Probe	2018-08-19	2019-08-19	006798
Larson Davis CAL200 Acoustic Calibrator	2018-07-24	2019-07-24	007027
Larson Davis Model 831	2018-02-28	2019-02-28	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2018-03-07	2019-03-07	007185

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

As Received Level: 113.29
Adjusted Level: 114.00

-- **End of measurement results**--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.16	-0.20	-1.20	0.80	0.23	Pass
1000	0.13	0.00	-0.70	0.70	0.23	Pass
8000	-3.68	-3.00	-5.50	-1.50	0.32	Pass

-- **End of measurement results**--

Calibration Certificate

Certificate Number 2019001794

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	831
Serial Number	0003758
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Larson Davis Model 831 Class 1 Sound Level Meter Firmware Revision: 2.314

Procedure Number	D0001.8378		
Technician	Ron Harris		
Calibration Date	13 Feb 2019		
Calibration Due	13 Feb 2020		
Temperature	22.81	°C	± 0.25 °C
Humidity	51.3	%RH	± 2.0 %RH
Static Pressure	85.39	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 029580 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 μPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis Model 831 Sound Level Meter Manual, I831.01 Rev O, 2016-09-19

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 μPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 successfully completed by Physikalisch-Technische Bundesanstalt (PTB) on 2016-02-24 certificate number DE-15-M-PTB-0056.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organization responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013 / ANSI/ASA S1.4-2014/Part 2, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1; the sound level meter submitted for testing conforms to the class 1specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
SRS DS360 Ultra Low Distortion Generator	2018-06-21	2019-06-21	006311
Hart Scientific 2626-H Temperature Probe	2018-08-19	2019-08-19	006798

Calibration Certificate

Certificate Number 2019001813

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number LxT SE
Serial Number 0003982
Test Results **Pass**
Initial Condition AS RECEIVED same as shipped
Description Sound Expert LxT
Class 1 Sound Level Meter
Firmware Revision: 2.302

Procedure Number D0001.8384
Technician Ron Harris
Calibration Date 13 Feb 2019
Calibration Due 13 Feb 2020
Temperature 22.98 °C ± 0.25 °C
Humidity 50.9 %RH ± 2.0 %RH
Static Pressure 85.39 kPa ± 0.13 kPa

Evaluation Method ***Tested with:***
Larson Davis PRMLxT1L. S/N 035956
PCB 377B20. S/N 149322
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 μPa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1
IEC 60804:2000 Type 1
IEC 61252:2002
IEC 61260:2001 Class 1
IEC 61672:2013 Class 1

ANSI S1.4-2014 Class 1
ANSI S1.4 (R2006) Type 1
ANSI S1.11 (R2009) Class 1
ANSI S1.25 (R2007)
ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 μPa

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2018-09-19	2019-09-19	001250
SRS DS360 Ultra Low Distortion Generator	2018-06-21	2019-06-21	006311
Hart Scientific 2626-H Temperature Probe	2018-08-19	2019-08-19	006798
Larson Davis CAL200 Acoustic Calibrator	2018-07-24	2019-07-24	007027
Larson Davis Model 831	2018-02-28	2019-02-28	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2018-03-07	2019-03-07	007185

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.01	113.80	114.20	0.14	Pass

As Received Level: 111.80

Adjusted Level: 114.01

-- End of measurement results--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.16	-0.20	-1.20	0.80	0.23	Pass
1000	0.05	0.00	-0.70	0.70	0.23	Pass
8000	-2.71	-3.00	-5.50	-1.50	0.32	Pass

-- End of measurement results--

Calibration Certificate

Certificate Number 2019001989

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number	CAL200
Serial Number	11658
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Larson Davis CAL200 Acoustic Calibrator

Procedure Number	D0001.8386		
Technician	Scott Montgomery		
Calibration Date	15 Feb 2019		
Calibration Due	15 Feb 2020		
Temperature	24	°C	± 0.3 °C
Humidity	36	%RH	± 3 %RH
Static Pressure	101.2	kPa	± 1 kPa

Evaluation Method	The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 μPa.
Compliance Standards	Compliant to Manufacturer Specifications per D0001.8190 and the following standards: IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	09/06/2018	09/06/2019	001021
Larson Davis Model 2900 Real Time Analyzer	04/10/2018	04/10/2019	001051
Microphone Calibration System	03/07/2018	03/07/2019	005446
1/2" Preamplifier	09/20/2018	09/20/2019	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/07/2018	08/07/2019	006507
1/2 inch Microphone - RI - 200V	05/10/2018	05/10/2019	006510
Pressure Transducer	07/18/2018	07/18/2019	007368

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

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Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

2/15/2019 11:09:37AM

D0001.8410 Rev B

Calibration Certificate

Certificate Number 2019001986

Customer:

Susquehanna Civil Inc
Suite 10
50 Grumbacher Road
York, PA 17406, United States

Model Number CAL200
Serial Number 11657
Test Results **Pass**
Initial Condition AS RECEIVED same as shipped
Description Larson Davis CAL200 Acoustic Calibrator

Procedure Number D0001.8386
Technician Scott Montgomery
Calibration Date 15 Feb 2019
Calibration Due 15 Feb 2020
Temperature 24 °C ± 0.3 °C
Humidity 35 %RH ± 3 %RH
Static Pressure 101.3 kPa ± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 μPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	09/06/2018	09/06/2019	001021
Larson Davis Model 2900 Real Time Analyzer	04/10/2018	04/10/2019	001051
Microphone Calibration System	03/07/2018	03/07/2019	005446
1/2" Preamplifier	09/20/2018	09/20/2019	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/07/2018	08/07/2019	006507
1/2 inch Microphone - RI - 200V	05/10/2018	05/10/2019	006510
Pressure Transducer	07/18/2018	07/18/2019	007368

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

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Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Certificate Number 2019001986

Total Harmonic Distortion + Noise (THD+N) Over Pressure

Tested at: 114 dB, 24 °C, 36 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.1	0.31	0.00	2.00	0.25 ‡	Pass
101.3	101.5	0.31	0.00	2.00	0.25 ‡	Pass
92.0	91.9	0.32	0.00	2.00	0.25 ‡	Pass
83.0	83.0	0.33	0.00	2.00	0.25 ‡	Pass
74.0	74.0	0.36	0.00	2.00	0.25 ‡	Pass
65.0	65.0	0.40	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Signatory: Scott Montgomery

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ilac-MRA

ACCREDITED
Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Appendix H

TRAINING CERTIFICATES
FOR PREPARERS & REVIEWERS

Certificate of Continuing Education

This is to certify that

Crystalann Deardorff

has satisfactorily completed 32 hours of training on

FHWA Traffic Noise Model 2.5

and 14 hours of training on

Traffic Noise Fundamentals

conducted by

Bowlby & Associates, Inc.
Franklin, Tennessee
February 6 - 11, 2005

William Bowlby
William Bowlby, Ph.D., P.E.
Bowlby & Associates, Inc.

Roger L Wayson
Roger L. Wayson, Ph.D., P.E.
University of Central Florida

Certificate of Continuing Education

This is to certify that

Siobhan Kiernan

has satisfactorily completed 30 hours of training on

FHWA TRAFFIC NOISE MODEL 2.5

conducted by

Bowlby & Associates, Inc.

Franklin, Tennessee
September 27-30, 2016

William Bowlby, Ph.D., P.E.
Bowlby & Associates, Inc.

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U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

NAMITA SINHA

has participated in

NHI Course No. FHWA-NHI-142063

Highway Traffic Noise: Basic Acoustics - WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course*

Hours of Instruction: *2 hours*

Date: *2/19/2016*

Valerie Briggs

Valerie Briggs, Director
National Highway Institute

Appendix I

WARRANTED, FEASIBLE, AND REASONABLE WORKSHEETS

DRAFT - PRELIMINARY

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

Date May 30, 2019
Project Name Eisenhower Drive Extension Project
County Adams & York
SR, Section Alternative 5C
Community Name and/or NSA # NSA 3 - Villas at Cattail
Noise Wall Identification (i.e., Wall 1) Wall 1

General

1. Type of project (new location, reconstruction, etc.): New Off-Alignment Alternative 5C

2. Total number of impacted receptor units in community

Category A units impacted	0
Category B units impacted	5
Category C units impacted	7
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) 2007
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2019 - TBD
   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: 12
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 11/12 = 92%
   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
      UNKNOWN - TBD
2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall: 25,926
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss): 13
   c. SF/BR = 2a/2b: 1,994
   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

   Note: for most areas, exterior no-barrier levels are below 60 decibel range

   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:
Interactions with property owners indicate concerns about future noise levels.

Responsible/Qualified Individuals Making the Above Decisions

___________________________________ Date:______
PennDOT, Engineering District Environmental Manager

___________________________________ Date:______
Qualified Professional Performing the Analysis TO BE SIGNED FOR FINAL REPORT
(name, title, and company name)

DRAFT - PRELIMINARY

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

Date May 30, 2019
Project Name Eisenhower Drive Extension Project
County Adams & York
SR, Section Alternative 5C
Community Name and/or NSA # NSA 5 - Barley Circle Neighborhood
Noise Wall Identification (i.e., Wall 1) Wall 2

General

1. Type of project (new location, reconstruction, etc.): New Off-Alignment Alternative 5C

2. Total number of impacted receptor units in community

Category A units impacted	0
Category B units impacted	4
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) Unknown
   - b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2019 - TBD
   - 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: 4
   - b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 4/4 = 100%
   - 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
     UNKNOWN - TBD
2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   - a. Area (SF) of the proposed noise wall: 12,875
   - b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss): 6
   - c. SF/BR = 2a/2b: 2,146
   - 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

   Note: for most areas, exterior no-barrier levels are below 60 decibel range

   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:

Interactions with property owners indicate concerns about future noise levels.

There is a high potential for the NSA 5 barrier to pass the MaxSF/BR reasonableness criteria during the final design process using refined noise modeling methods and final proposed roadway information. This NSA should be revisited if Alternative 5C is chosen as the preferred alternative.

Responsible/Qualified Individuals Making the Above Decisions

___________________________________ Date:______
PennDOT, Engineering District Environmental Manager

___________________________________ Date:______
Qualified Professional Performing the Analysis TO BE SIGNED FOR FINAL REPORT
(name, title, and company name)

DRAFT - PRELIMINARY

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

Date May 30, 2019
Project Name Eisenhower Drive Extension Project
County Adams & York
SR, Section Alternative 5C
Community Name and/or NSA # NSA 8 - Conewago Drive Neighborhood
Noise Wall Identification (i.e., Wall 1) Wall 3

General

1. Type of project (new location, reconstruction, etc.):	New Off-Alignment Alternative 5C
2. Total number of impacted receptor units in community	
Category A units impacted	0
Category B units impacted	33
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)	Unknown
b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	2019 - TBD
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: 33
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 33/33 = 100%
   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
      UNKNOWN - TBD
2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall: 59,027
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss): 48
   c. SF/BR = 2a/2b: 1,230
   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
    Note: for most areas, exterior no-barrier levels are below 60 decibel range
    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:

Interactions with property owners indicate concerns about future noise levels.

Responsible/Qualified Individuals Making the Above Decisions

________________________________ Date:______
PennDOT, Engineering District Environmental Manager

________________________________ Date:______
Qualified Professional Performing the Analysis TO BE SIGNED FOR FINAL REPORT
(name, title, and company name)

DRAFT - PRELIMINARY

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

Date May 30, 2019
Project Name Eisenhower Drive Extension Project
County Adams & York
SR, Section Alternative 5C
Community Name and/or NSA # NSA 9 - Sherry Village Neighborhood
Noise Wall Identification (i.e., Wall 1) Wall 4

General

1. Type of project (new location, reconstruction, etc.): New Off-Alignment Alternative 5C

2. Total number of impacted receptor units in community

Category A units impacted	0
Category B units impacted	46
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) Unknown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2019 - TBD
   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: 46
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 36/46 = 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
      UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall: 36,927
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss): 36
   c. SF/BR = 2a/2b: 1,026
   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
      Note: for most areas, exterior no-barrier levels are below 60 decibel range
   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:

Interactions with property owners indicate concerns about future noise levels.

Responsible/Qualified Individuals Making the Above Decisions

____ Date:______
PennDOT, Engineering District Environmental Manager

____ Date:______
Qualified Professional Performing the Analysis TO BE SIGNED FOR FINAL REPORT
(name, title, and company name)

DRAFT - PRELIMINARY

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

Date May 30, 2019
Project Name Eisenhower Drive Extension Project
County Adams & York
SR, Section Alternative 5C
Community Name and/or NSA # NSA 10 - Houses along extended Eisenhower Dr
Noise Wall Identification (i.e., Wall 1) Wall 5

General

1. Type of project (new location, reconstruction, etc.): New Off-Alignment Alternative 5C

2. Total number of impacted receptor units in community

Category A units impacted	0
Category B units impacted	3
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) Unknown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2019 - TBD
   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: 3
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 0%
   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

      UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall: N/A - Not Feasible
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss)
   c. SF/BR = 2a/2b
   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

___________________________________ Date:______
Qualified Professional Performing the Analysis
(name, title, and company name)

TO BE SIGNED FOR FINAL REPORT

DRAFT - PRELIMINARY

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

Date May 30, 2019

Project Name Eisenhower Drive Extension Project

County Adams & York

SR, Section Alternative 5C

Community Name and/or NSA # NSA 11 - Houses along extended Eisenhower Drive

Noise Wall Identification (i.e., Wall 1) Wall 6

General

1. Type of project (new location, reconstruction, etc.): New Off-Alignment Alternative 5C

2. Total number of impacted receptor units in community

Category A units impacted	0
Category B units impacted	2
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) Unknown
   - b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2019 - TBD
   - 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: 2
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 0%
   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 UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall: N/A - Not Feasible
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss): 1
   c. SF/BR = 2a/2b: N/A - Not Feasible
   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

_________________________________ Date:______
Qualified Professional Performing the Analysis TO BE SIGNED FOR FINAL REPORT
(name, title, and company name)

DRAFT - PRELIMINARY

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

Date May 30, 2019
Project Name Eisenhower Drive Extension Project
County Adams & York
SR, Section Alternative 5C
Community Name and/or NSA # NSA 12 - Utz Soccer Fields
Noise Wall Identification (i.e., Wall 1) Wall 7

General

1. Type of project (new location, reconstruction, etc.): New Off-Alignment Alternative 5C

2. Total number of impacted receptor units in community
   - Category A units impacted 0
   - Category B units impacted 0
   - Category C units impacted 10
   - 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) Unknown
   b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): 2019 - TBD
   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: 10
   b. Percentage of impacted receptor units receiving 5 dB(A) or more insertion loss: 0%
   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
   UNKNOWN - TBD

2. Square Footage Per Benefited Receptor (SF/BR) Evaluation
   a. Area (SF) of the proposed noise wall: N/A - Not Feasible
   b. Number of benefited receptor units (any unit receiving 5 dB(A) or more insertion loss): ______
   c. SF/BR = 2a/2b ______
   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
   Note: for most areas, exterior no-barrier levels are below 60 decibel range
   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

___________________________________ Date:______
Qualified Professional Performing the Analysis TO BE SIGNED FOR FINAL REPORT
(name, title, and company name)

Appendix J

PUBLIC INVOLVEMENT DOCUMENTATION

INTRODUCTION

Every effort to involve the local officials and affected communities is being made throughout the design process. PennDOT Publication No. 295 Public Involvement Handbook is being used as a guide for the public involvement process. A project website has been established to promote the entire project to the public. The project is being called the Eisenhower Drive Extension Project and the website is http://eisenhowerdriveextension.com/. The website is being updated throughout the design and construction phases of the project.

A Public Plans Display Open House was conducted on June 21, 2018, from 6:00 to 8:00 pm and a second Open House was held on May 9, 2019 from 2pm to 7pm, at the Southeast Adams Volunteer Emergency Services facility located at 5865 Hanover Road, Hanover, PA 17331. The purpose of these meetings was to: introduce the project to the public, provide information on the status of the project, display the preliminary proposed alignments, provide the opportunity to view the display boards presenting various elements of the project, provide the public an opportunity to provide feedback on the project, and meet with the project design team.

In addition to the Public Plans Display Open House held on June 21, 2018 and May 9, 2019, the following public involvement activities are anticipated:

- Redevelopment of the project website: http://eisenhowerdriveextension.com/
- The Draft Environmental Assessment (EA) will be made available to the public for review, and
- Around the same time as the public review period, there will be an opportunity for a Public Hearing.

In addition, the design team continues to coordinate with specific property owners along the preferred alignment corridors, addressing concerns and answering questions about the noise analysis as needed.

Documents associated with public involvement coordination are included herein.

JUNE 21, 2018 PUBLIC INVOLVEMENT DISPLAYS

WELCOME TO TONIGHT'S OPEN HOUSE PLANS DISPLAY

Station 1: Welcome & Registration

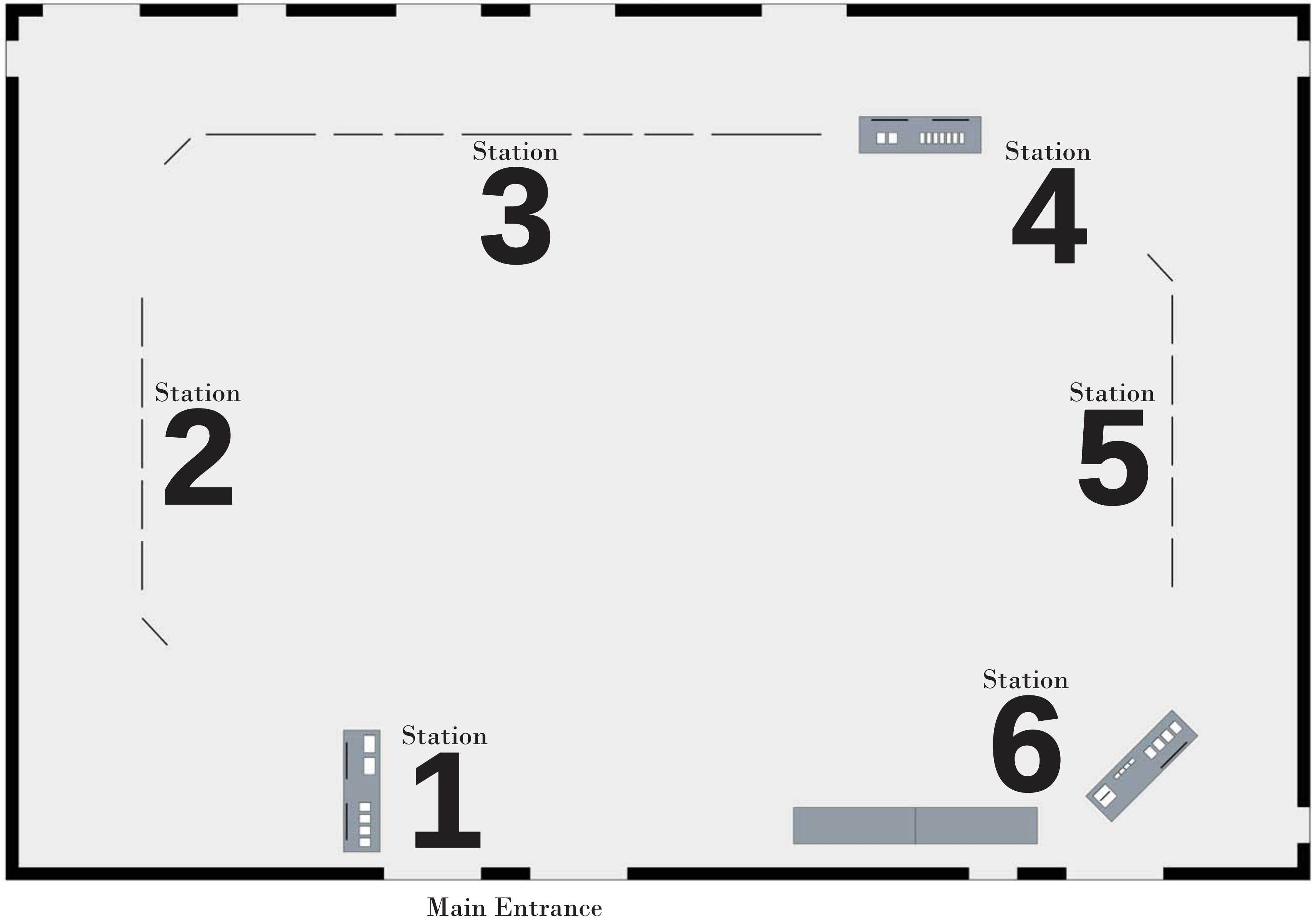
Station 2: Project Description

Station 3: Alignment Alternatives

Station 4: Right-of-Way

Station 5: Environmental Constraints

Station 6: Comments & Suggestions



EISENHOWER DRIVE EXTENSION PROJECT

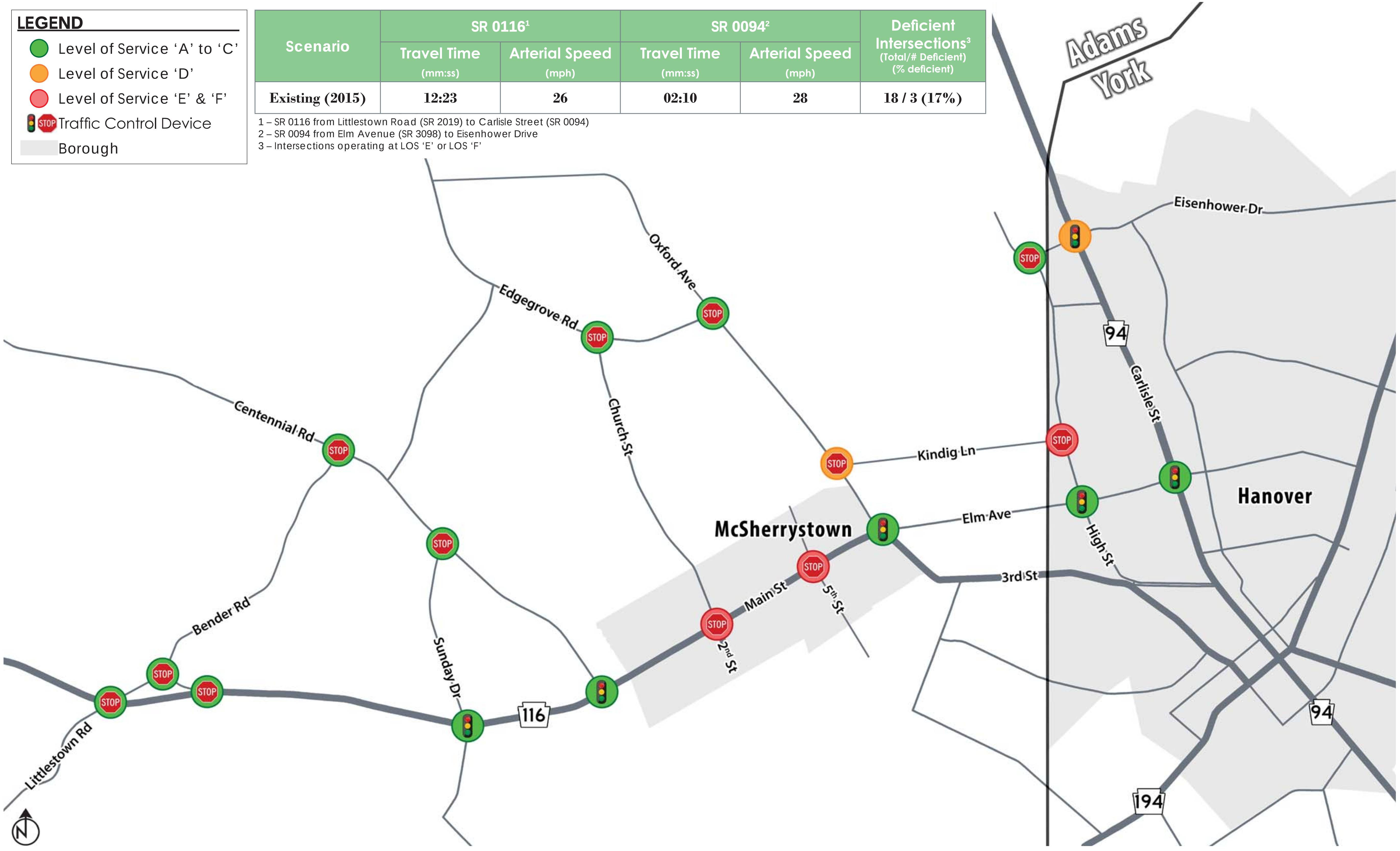
EXISTING (2015) LEVEL OF SERVICE

LEGEND

- 🟢 Level of Service ‘A’ to ‘C’
- 🟠 Level of Service ‘D’
- 🔴 Level of Service ‘E’ & ‘F’
- 🚦 STOP Traffic Control Device
- ⬜ Borough

Scenario	SR 0116[1]		SR 0094[2]		Deficient Intersections[3] (Total/# Deficient) (% deficient)
	Travel Time (mm:ss)	Arterial Speed (mph)	Travel Time (mm:ss)	Arterial Speed (mph)	
Existing (2015)	12:23	26	02:10	28	18 / 3 (17%)

1 – SR 0116 from Littlestown Road (SR 2019) to Carlisle Street (SR 0094)
2 – SR 0094 from Elm Avenue (SR 3098) to Eisenhower Drive
3 – Intersections operating at LOS ‘E’ or LOS ‘F’



Public Open House Plans Display - June 21, 2018

U.S. Department of Transportation Federal Highway Administration

pennsylvania DEPARTMENT OF TRANSPORTATION

EISENHOWER DRIVE
EXTENSION PROJECT

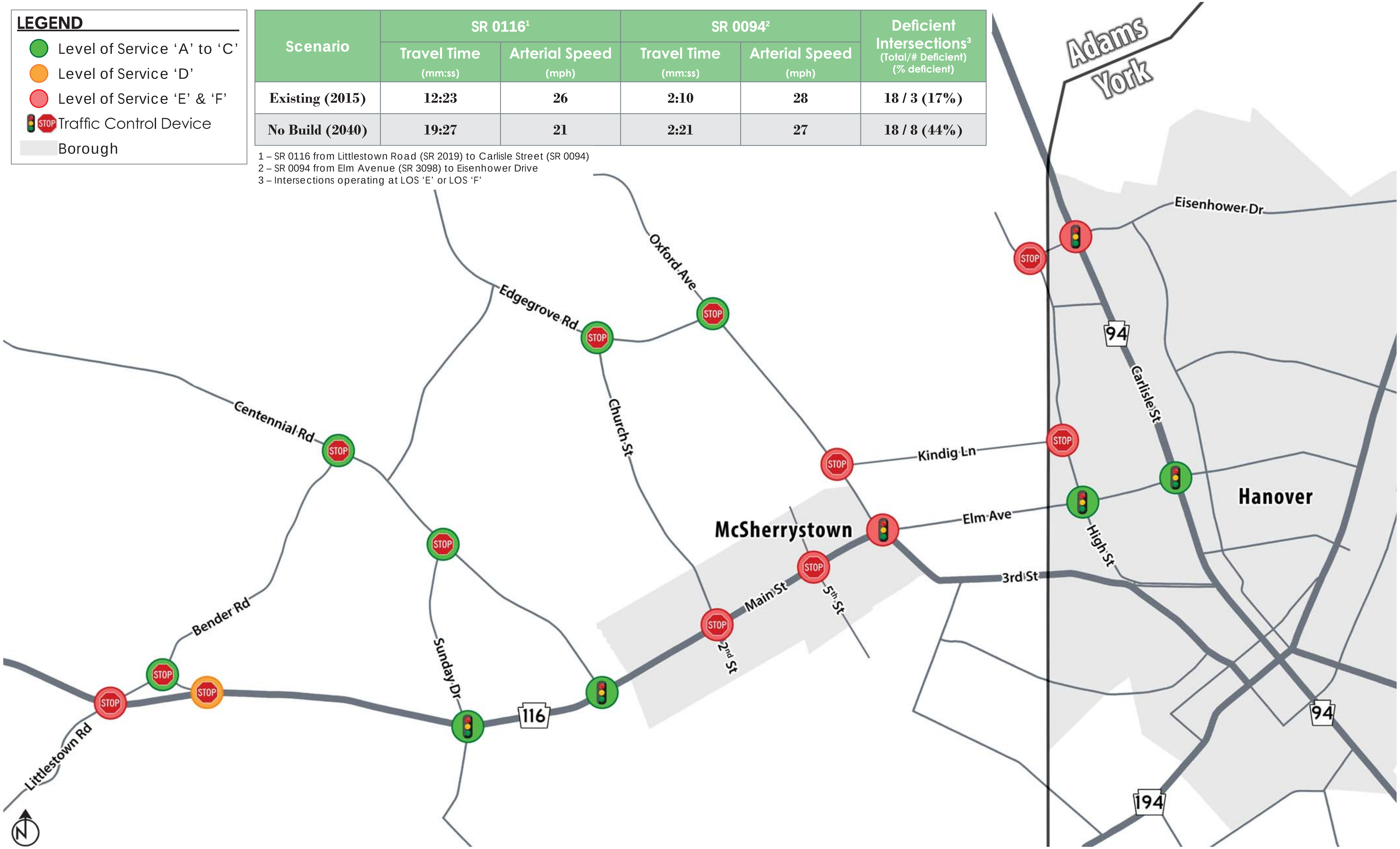
NO BUILD (2040) LEVEL OF SERVICE

LEGEND

- 🟢 Level of Service 'A' to 'C'
- 🟠 Level of Service 'D'
- 🔴 Level of Service 'E' & 'F'
- 🚦🛑 Traffic Control Device
- ▨ Borough

Scenario	SR 0116[1]		SR 0094[2]		Deficient Intersections[3] (Total/# Deficient) (% deficient)
	Travel Time (mm:ss)	Arterial Speed (mph)	Travel Time (mm:ss)	Arterial Speed (mph)	
Existing (2015)	12:23	26	2:10	28	18 / 3 (17%)
No Build (2040)	19:27	21	2:21	27	18 / 8 (44%)

1 – SR 0116 from Littlestown Road (SR 2019) to Carlisle Street (SR 0094)
2 – SR 0094 from Elm Avenue (SR 3098) to Eisenhower Drive
3 – Intersections operating at LOS 'E' or LOS 'F'



Public Open House Plans Display - June 21, 2018

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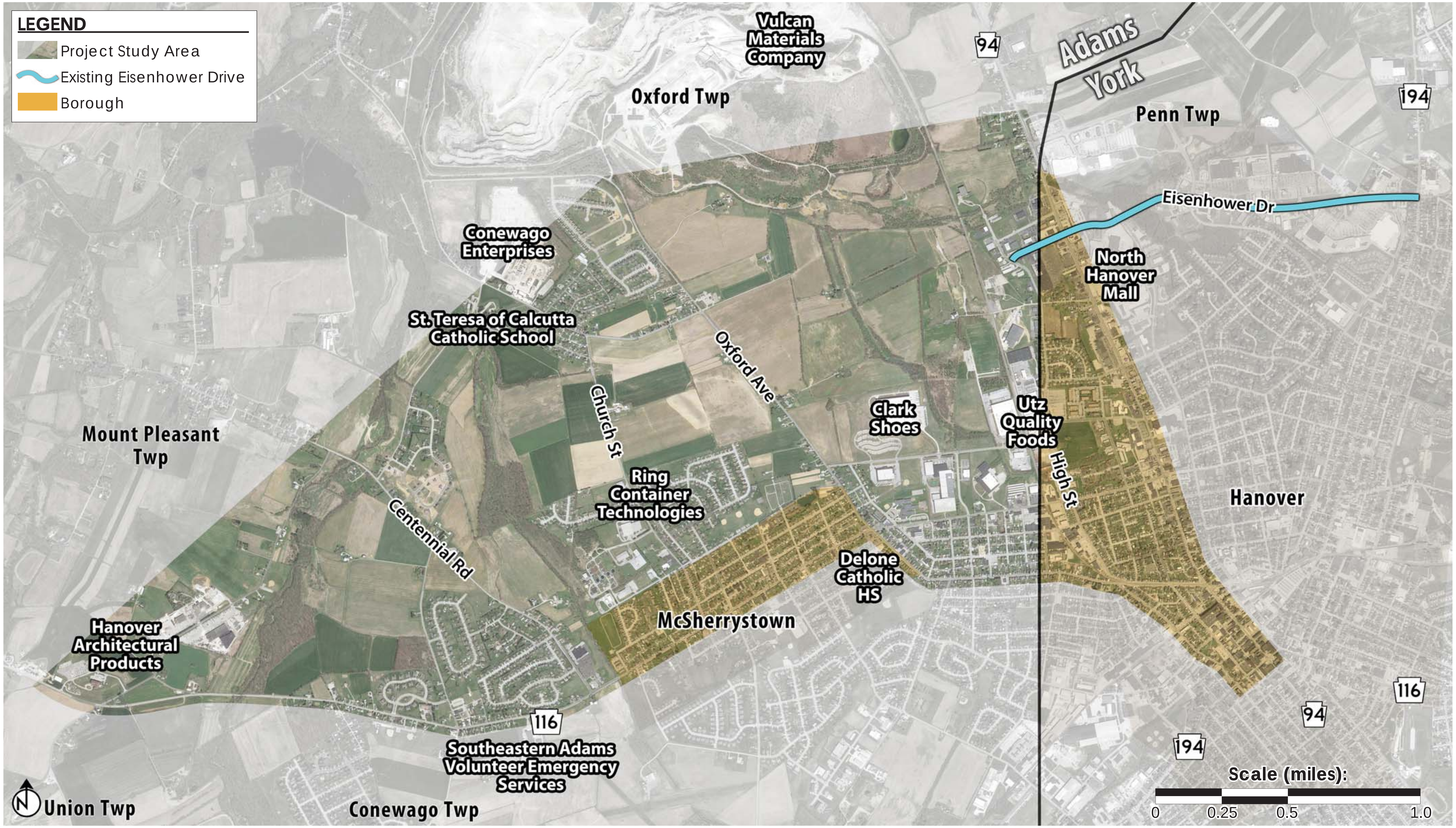
EISENHOWER DRIVE
EXTENSION PROJECT

PROJECT LOCATION



Public Open House Plans Display - June 21, 2018

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EISENHOWER DRIVE EXTENSION PROJECT

PROJECT HISTORY

1990's

Hanover Area Transportation Planning Study

- Completed in 1997
- Recommended several key projects for the region
- First identification of Eisenhower Drive Extension

2000's

PennDOT Planning Process

- Conducted from 2005 – 2007
- Evaluated environmental constraints and existing traffic conditions

2010's

Eisenhower Parkway Study (Local Effort)

- Completed in 2011 for Adams County and local municipalities
- Assisted in defining the locally preferred transportation corridor
- Defined preferred roadway typical section

Current

Current phase initiated in 2015

- The alignment alternatives have been developed and a general environmental overview has been completed using background data.
- Some investigative work (Wetlands, Bog Turtle Habitat Assessment, and Cultural Resources Above- and Below-Ground Surveys) has begun on "common" alignment areas.

We Are Here →

- **The project is currently in Preliminary Engineering.**
- **Detailed environmental and cultural resource investigations will occur Spring/Summer/Fall of 2018.**

Today's Purpose →

- **Present alignment alternatives to the public and gather feedback on the alternatives being studied.**

EISENHOWER DRIVE
EXTENSION PROJECT

PURPOSE AND NEED

Need

- Traffic congestion results in poor levels of service
- Poor traffic safety along SR 0116 and SR 0094
- Limited mobility and poor roadway connectivity/linkages

Purpose

- Facilitate safe and efficient multimodal travel within the project study area to meet current and future transportation needs.
- Provide a functional and modern roadway that maximizes current design criteria and promotes multimodal transportation.


Kindig/High - Looking East

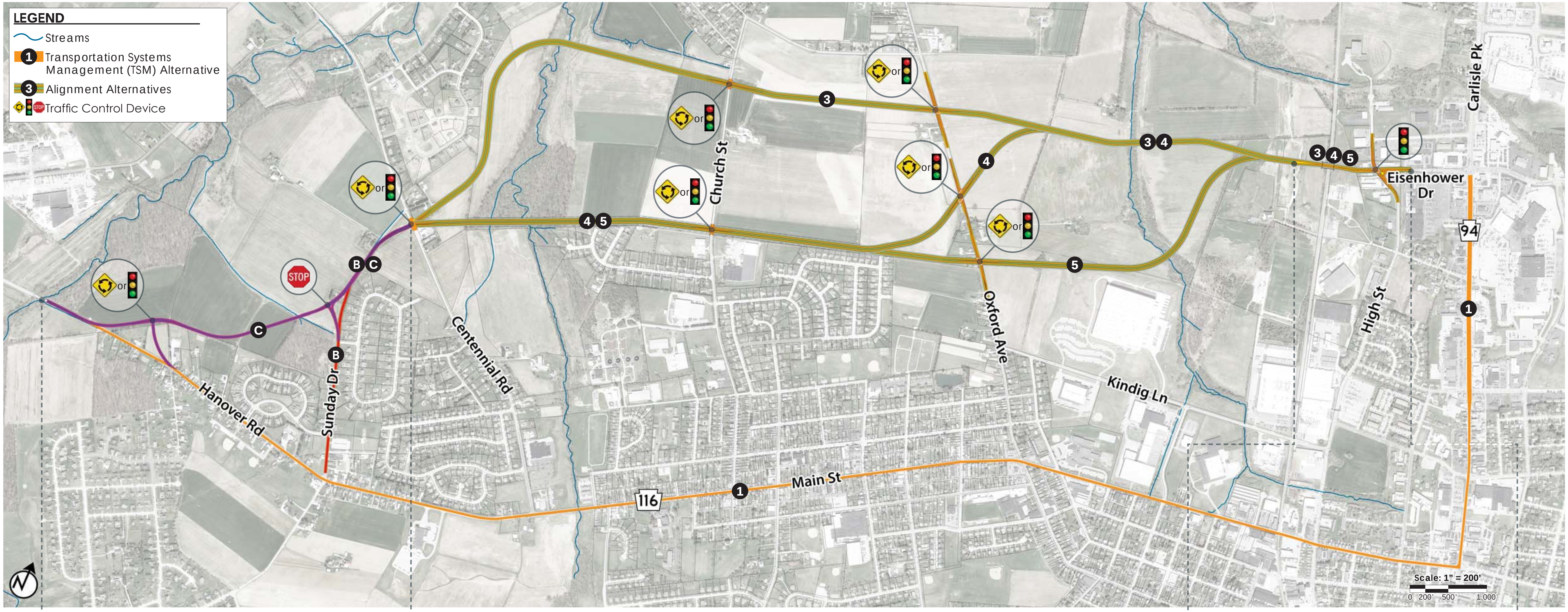
Elm/Oxford - Looking South

Main Street (McSherrystown) - Looking East

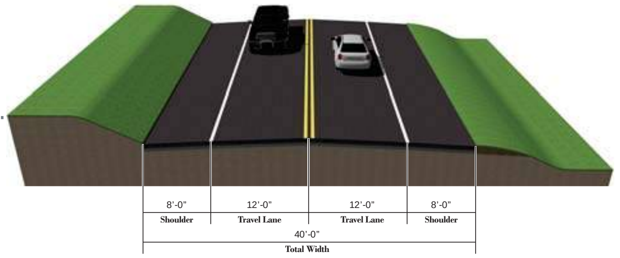
Eisenhower/Carlisle - Looking South

EISENHOWER DRIVE
EXTENSION PROJECT

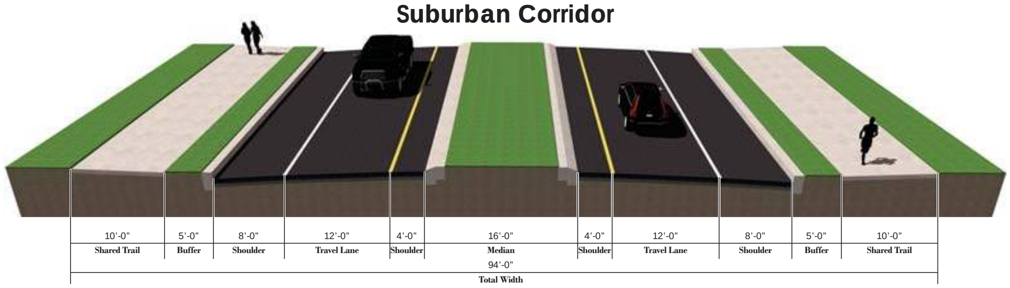
ALIGNMENT ALTERNATIVES



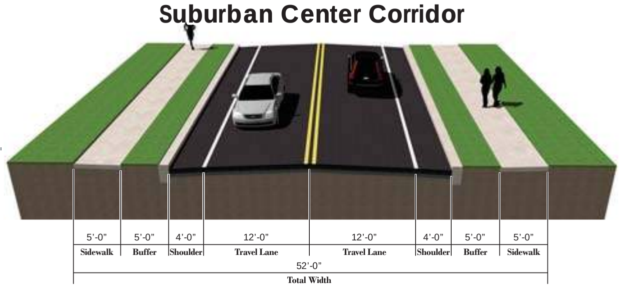
Rural Corridor



Suburban Corridor



Suburban Center Corridor



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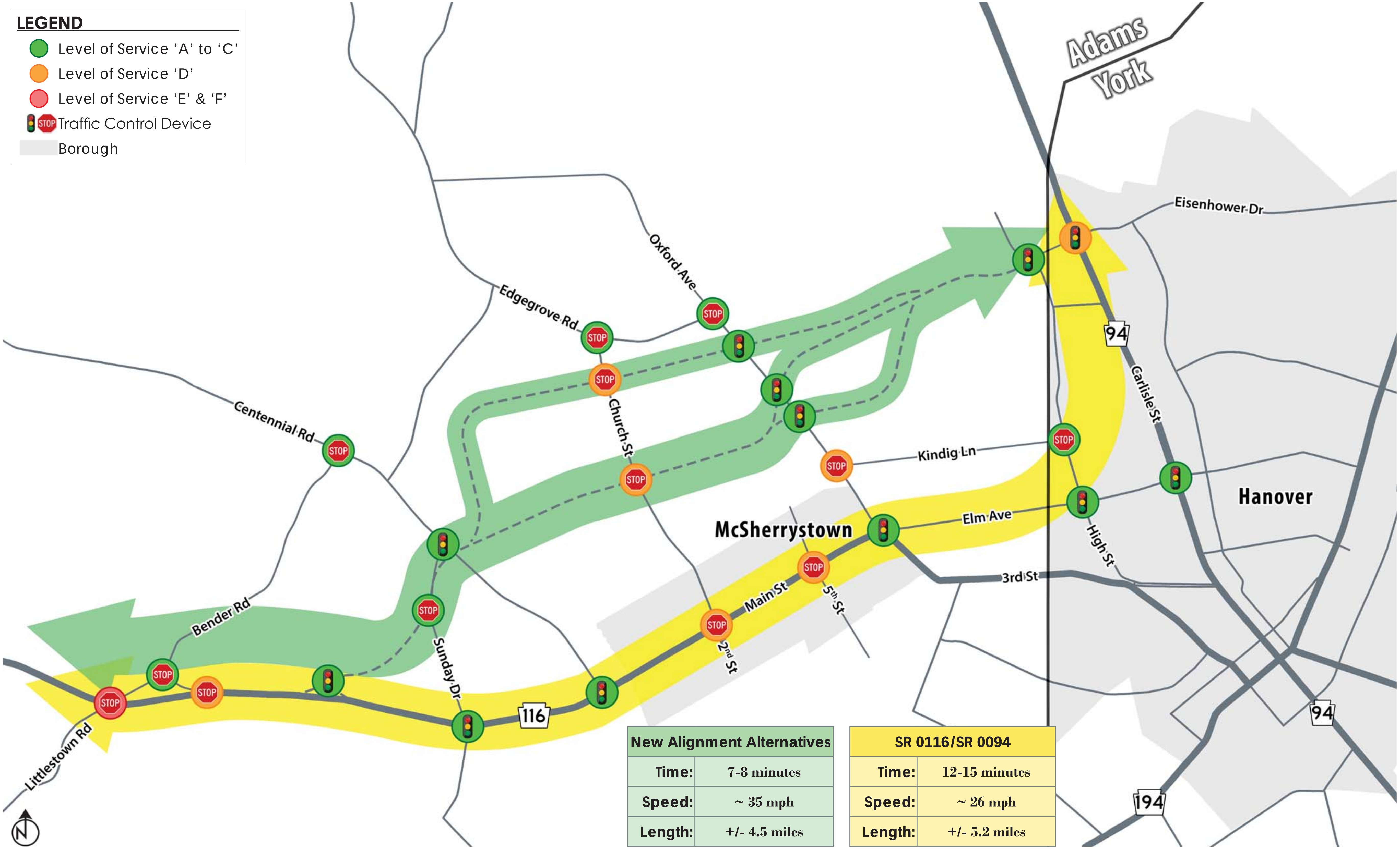
EISENHOWER DRIVE EXTENSION PROJECT

BUILD (2040) LEVELS OF SERVICE



LEGEND

- 🟢 Level of Service 'A' to 'C'
- 🟠 Level of Service 'D'
- 🔴 Level of Service 'E' & 'F'
- 🚦 STOP Traffic Control Device
- ▨ Borough

New Alignment Alternatives	
Time:	7-8 minutes
Speed:	~ 35 mph
Length:	+/- 4.5 miles

SR 0116/SR 0094	
Time:	12-15 minutes
Speed:	~ 26 mph
Length:	+/- 5.2 miles

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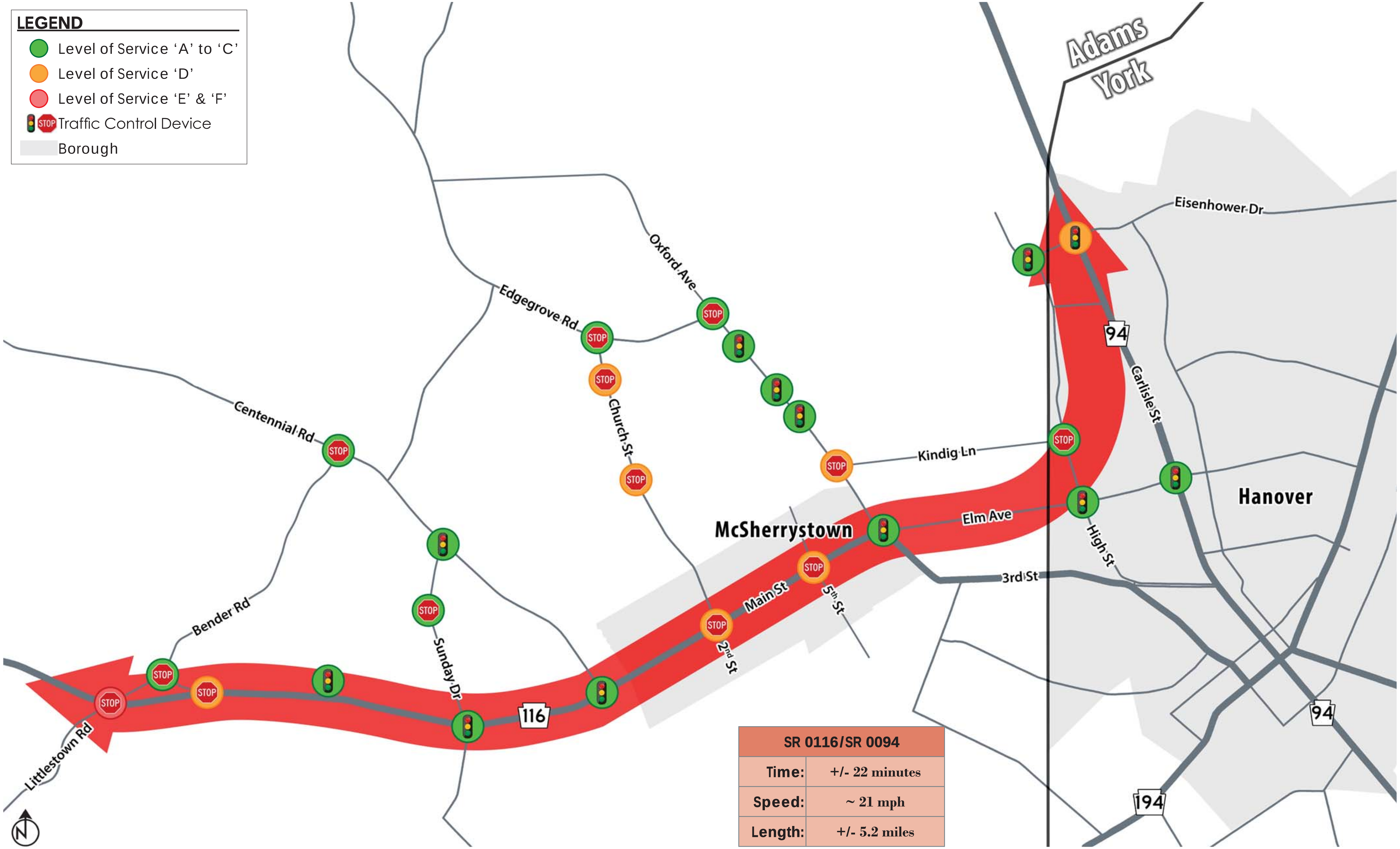
EISENHOWER DRIVE EXTENSION PROJECT

NO BUILD (2040) LEVELS OF SERVICE



LEGEND

- 🟢 Level of Service ‘A’ to ‘C’
- 🟠 Level of Service ‘D’
- 🔴 Level of Service ‘E’ & ‘F’
- 🚦 STOP Traffic Control Device
- ▨ Borough

SR 0116/SR 0094	
Time:	+/- 22 minutes
Speed:	~ 21 mph
Length:	+/- 5.2 miles

Public Open House Plans Display - June 21, 2018

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EISENHOWER DRIVE
EXTENSION PROJECT

ROUNDABOUT ALTERNATIVES

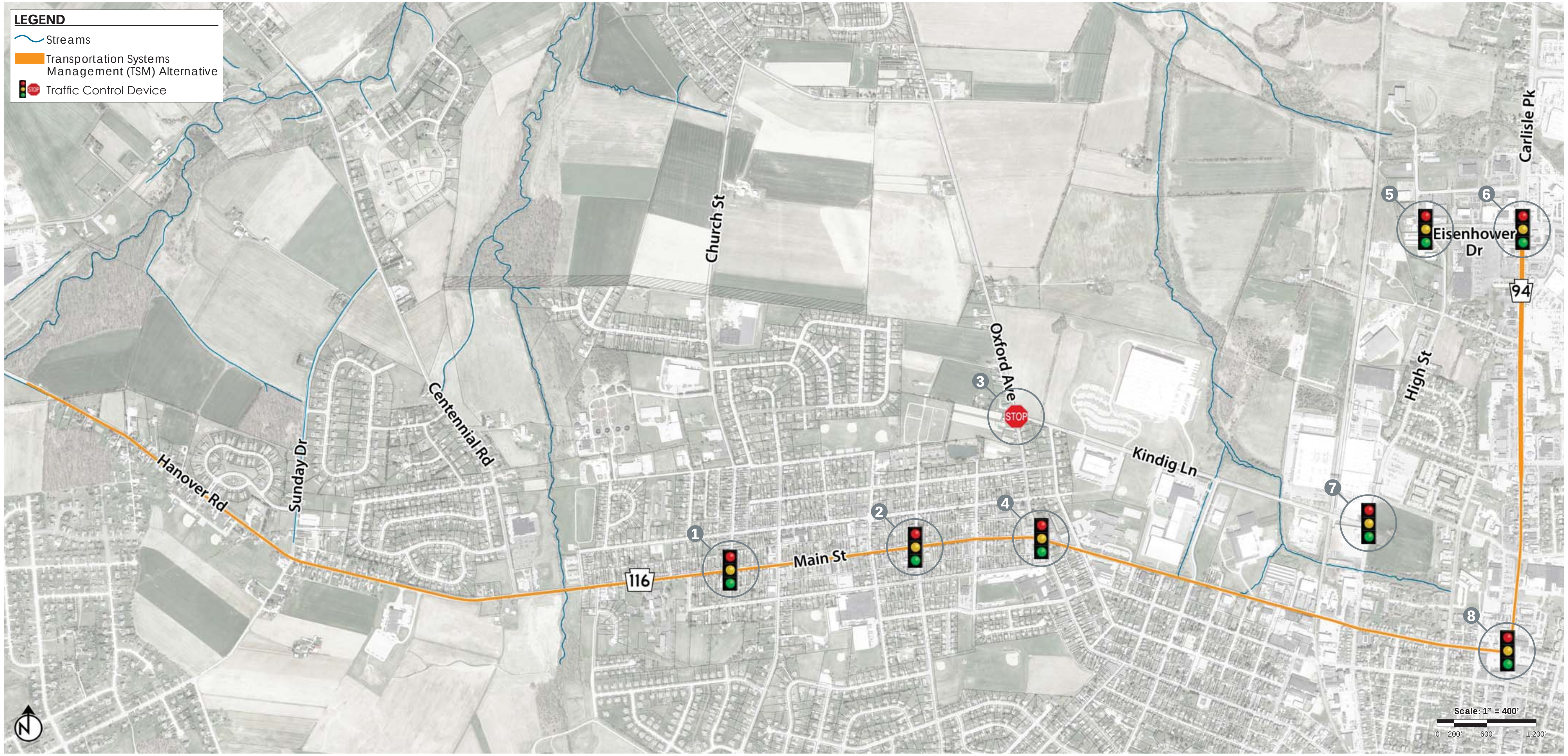
	Centennial Road	**Church Street**	**Oxford Avenue**
Alignment Alternative 3			
Alignment Alternative 4			
Alignment Alternative 5			

Alignment Alternative C

N

EISENHOWER DRIVE
EXTENSION PROJECT

TRANSPORTATION SYSTEMS MANAGEMENT (TSM) ALTERNATIVE



① **Main Street (SR 0116) & 2nd Street**
- Install new traffic signal

② **Main Street (SR 0116) & 5th Street**
- Install new traffic signal

③ **Oxford Avenue (SR 2008) & Kindig Lane**
- Convert to all-way stop controlled

④ **Main Street (SR 0116) & Oxford Avenue (SR 2008)**
- Construct additional EB through lane
- Construct additional WB through lane
- Construct EB left turn lane
- Construct WB left turn lane
- Construct SB left turn lane
- Reconstruct existing signal

⑤ **High Street & Eisenhower Drive**
- Install new traffic signal
- Construct SB left turn lane
- Channelize NB right turn with yield

⑥ **Carlisle Street (SR 0094) & Eisenhower Drive**
- Revise existing signal timing

⑦ **High Street & Kindig Lane**
- Install new traffic signal

⑧ **Elm Street (SR 3098) & Carlisle Street (SR 0094)**
- Construct additional NB through lane
- Construct additional SB through lane
- Reconstruct existing signal

Public Open House Plans Display - June 21, 2018

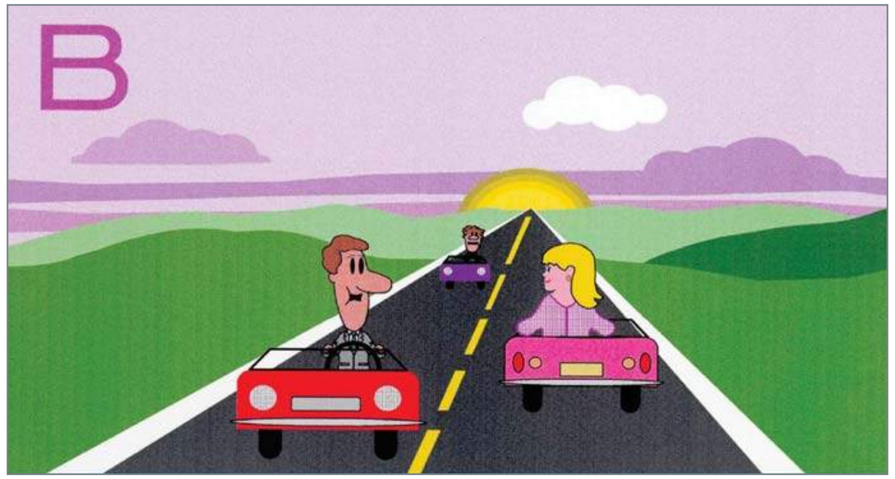
U.S. Department of Transportation
Federal Highway Administration

pennsylvania
DEPARTMENT OF TRANSPORTATION

EISENHOWER DRIVE
EXTENSION PROJECT

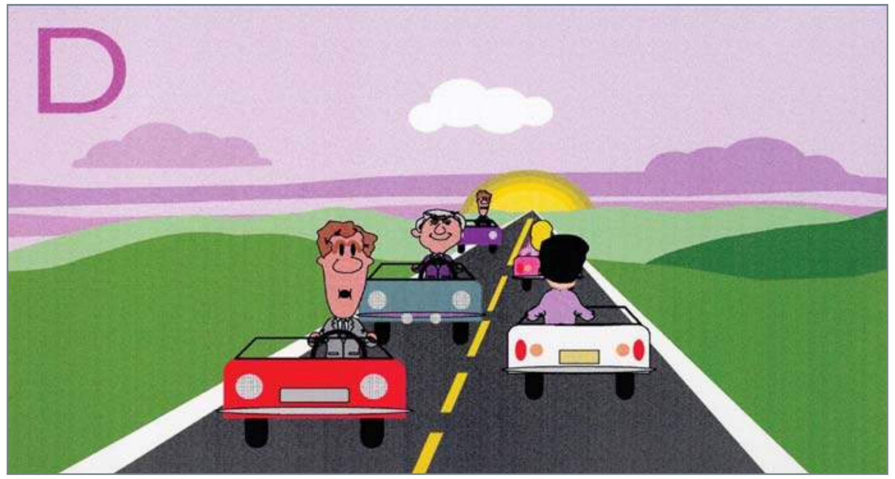
WHAT IS LEVEL OF SERVICE?

A Free Flow
A general level of comfort and convenience provided to the motorist is excellent.

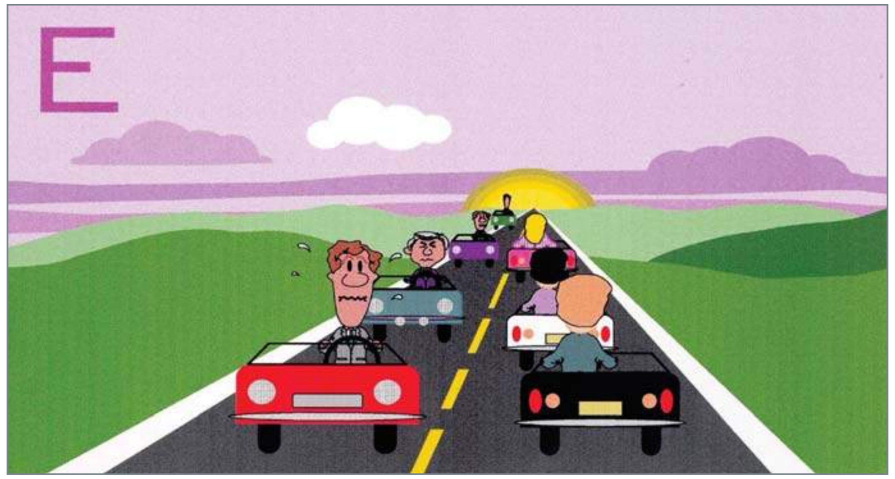


B Stable Flow
The presence of others in the traffic stream begins to affect individual behavior.

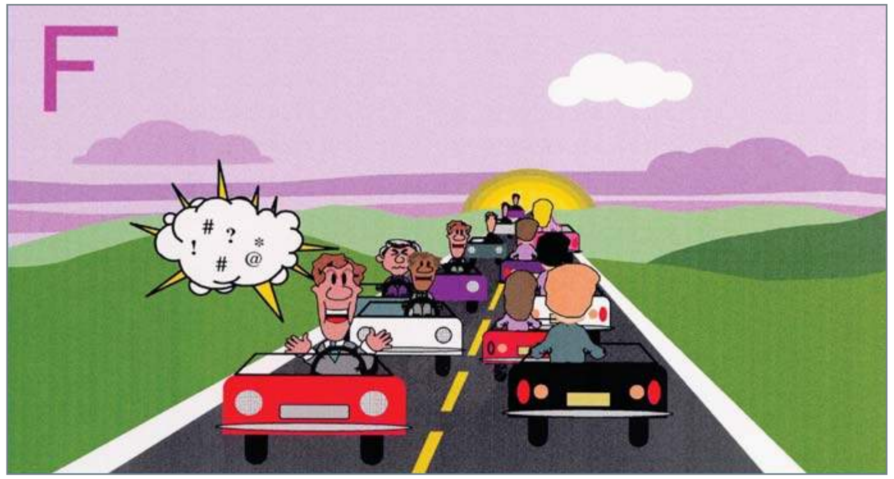
C Stable Flow
Comfort level declines noticeably at this level.



D High Density but Stable Flow
Speed and freedom to maneuver are severely restricted.



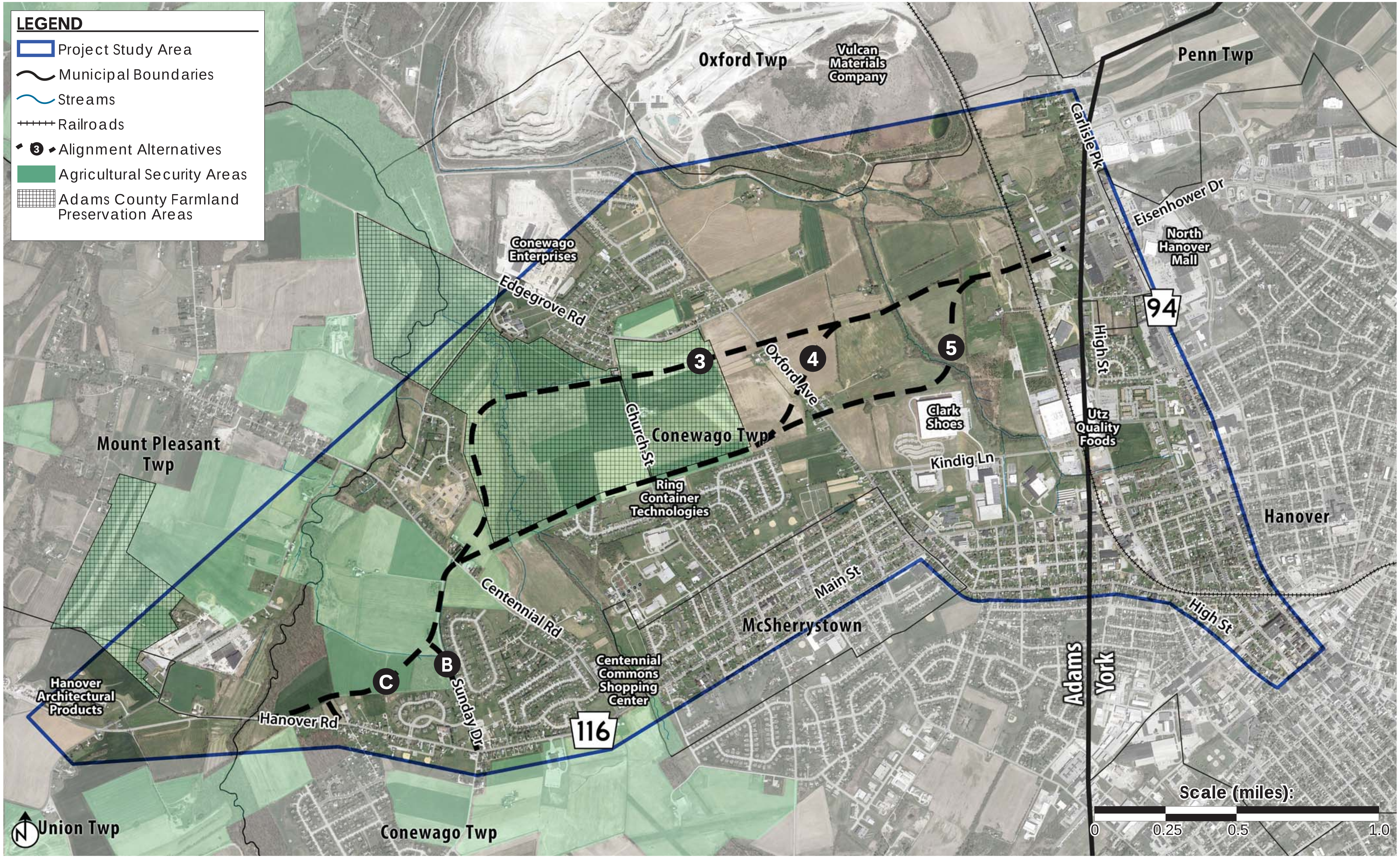
E Near or at Level of Capacity
Driver frustration level is generally high.



F Forced or Breakdown Flow
The amount of traffic approaching a point exceeds the amount which can traverse the point; gridlock.

EISENHOWER DRIVE
EXTENSION PROJECT

AGRICULTURAL RESOURCES



Public Open House Plans Display - June 21, 2018

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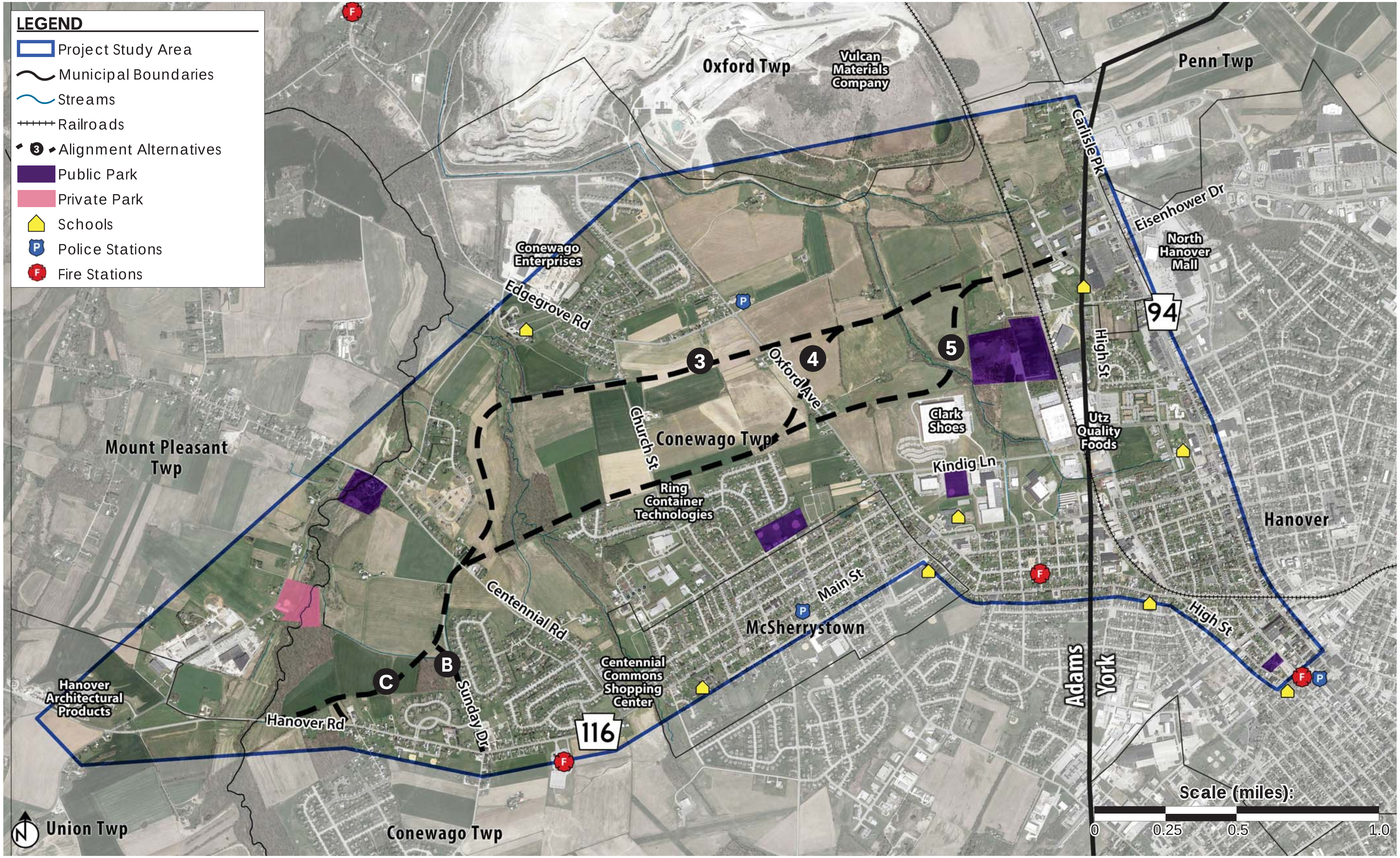
EISENHOWER DRIVE
EXTENSION PROJECT

COMMUNITY RESOURCES



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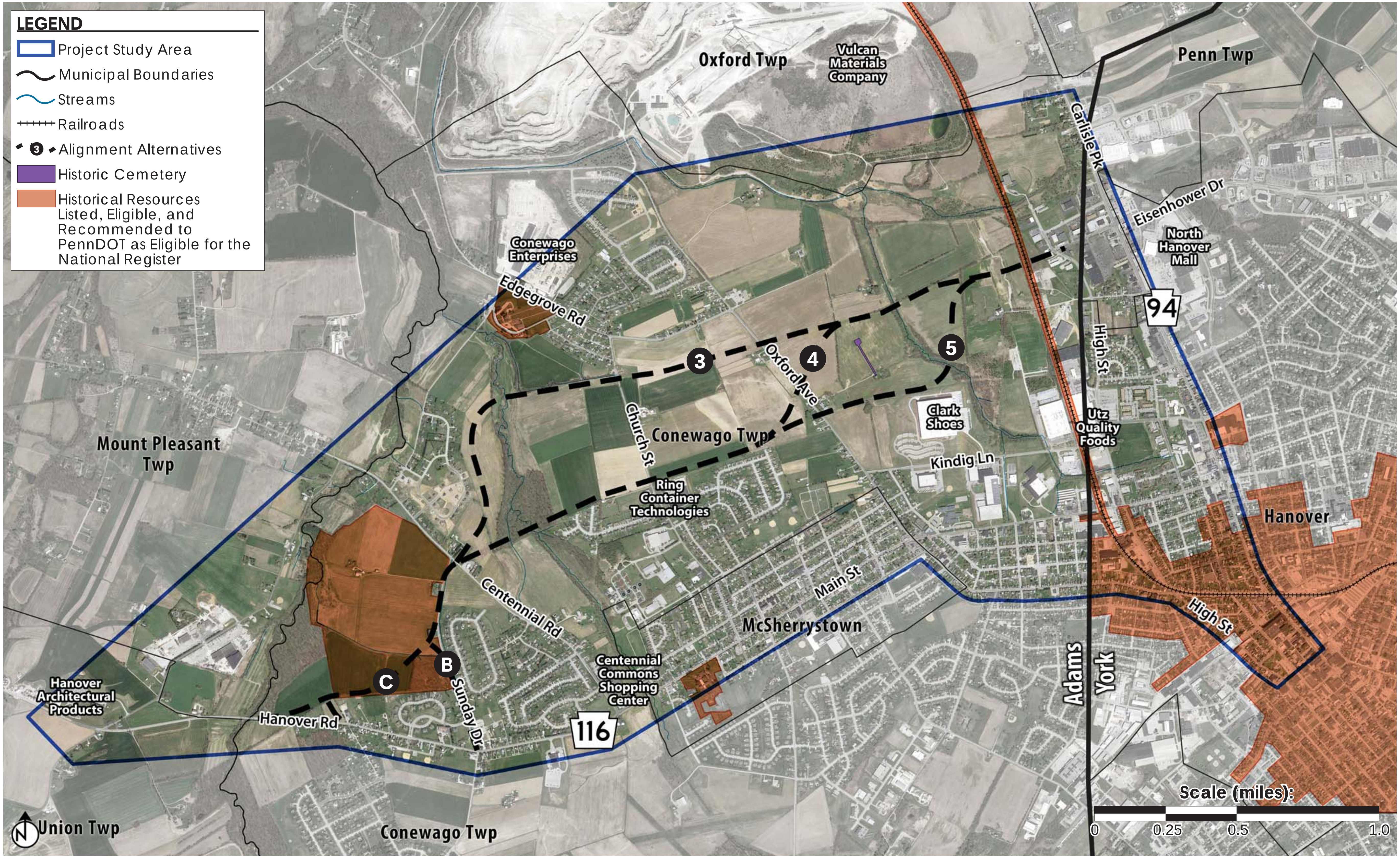
EISENHOWER DRIVE
EXTENSION PROJECT

CULTURAL RESOURCES



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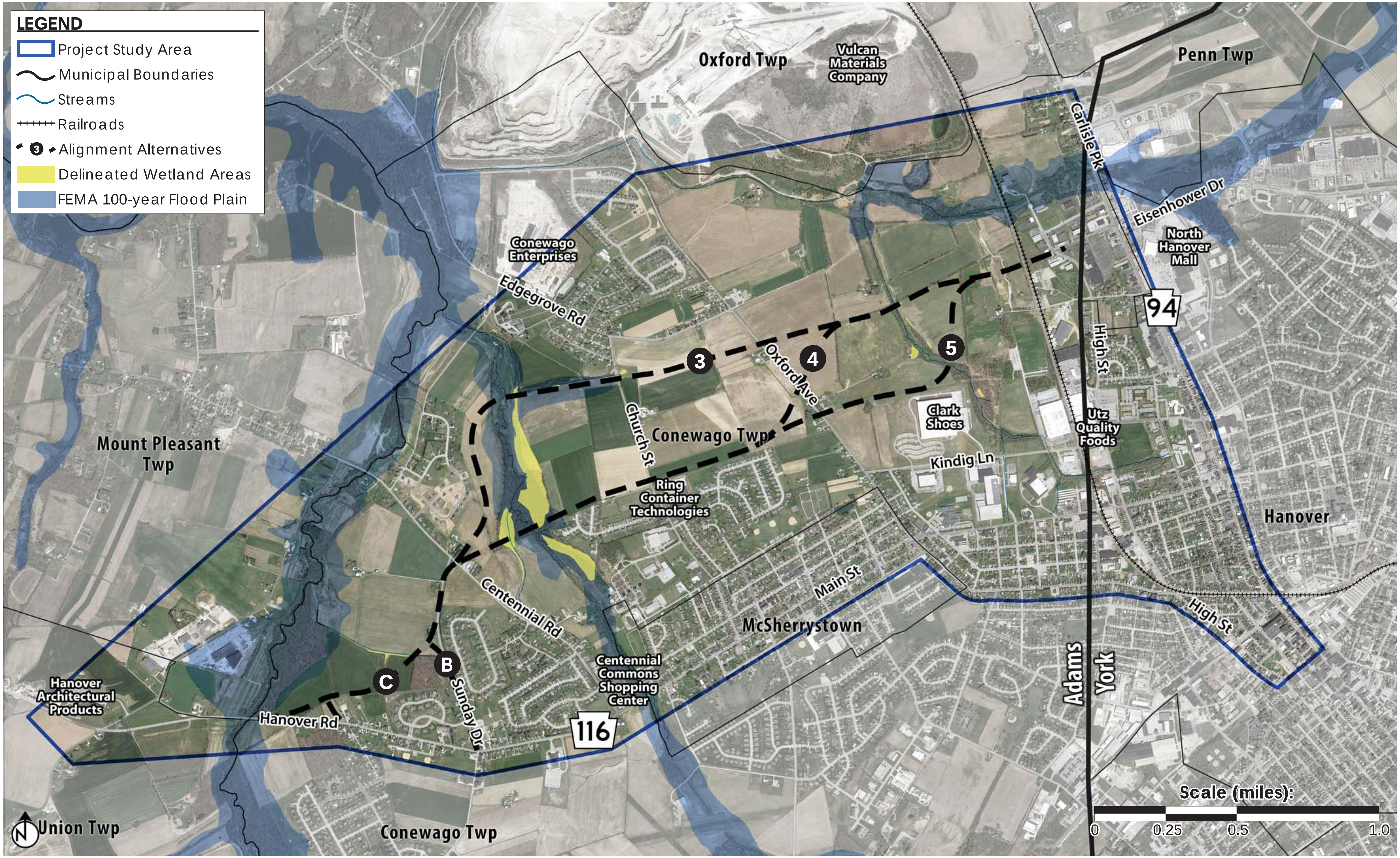
EISENHOWER DRIVE
EXTENSION PROJECT

WATER RESOURCES



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EISENHOWER DRIVE
EXTENSION PROJECT

PRELIMINARY IMPACTS MATRIX

	Alignment #						
	1 (TSM)	3B	3C	4B	4C	5B	5C
Aquatic Resource Impacts							
Wetlands (Acres)	0.0	0.2	0.2	1.0	1.0	1.0	1.0
Streams (# of Crossings)	0	2	4	3	5	3	5
Agricultural Resource Impacts							
Preserved Farmland (Acres)	0.0	15.7	15.7	0.0	0.0	0.0	0.0
Agricultural Security Areas (Acres)	0.0	18.8	21.6	14.2	16.8	14.3	16.9
Forested Land Impacts (Acres)	0.0	1.2	0.6	3.3	2.7	3.5	3.0
Cultural Resource Impacts							
Aboveground Historic Structures (Resources/Acres)	4 / 0.0	2 / 1.1	2 / 8.7	2 / 1.1	2 / 8.7	2 / 1.1	2 / 8.7
Project Cost (Million $)							
Construction	$11 - $13	$25 - $28	$29 - $32	$24 - $27	$28 - $31	$24 - $27	$29 - $32
Right-of-Way	$14 - $16	$8 - $9	$9 - $10	$7 - $8	$9 - $10	$7 - $8	$9 - $10
Total	$25 - $29	$33 - $37	$38 - $42	$31 - $35	$37 - $41	$31 - $35	$38 - $42

MAY 9, 2019 PUBLIC INVOLVEMENT DISPLAYS

EISENHOWER DRIVE EXTENSION PROJECT

PUBLIC OPEN HOUSE PLANS DISPLAY
GENERAL INFORMATION

PROJECT SCHEDULE

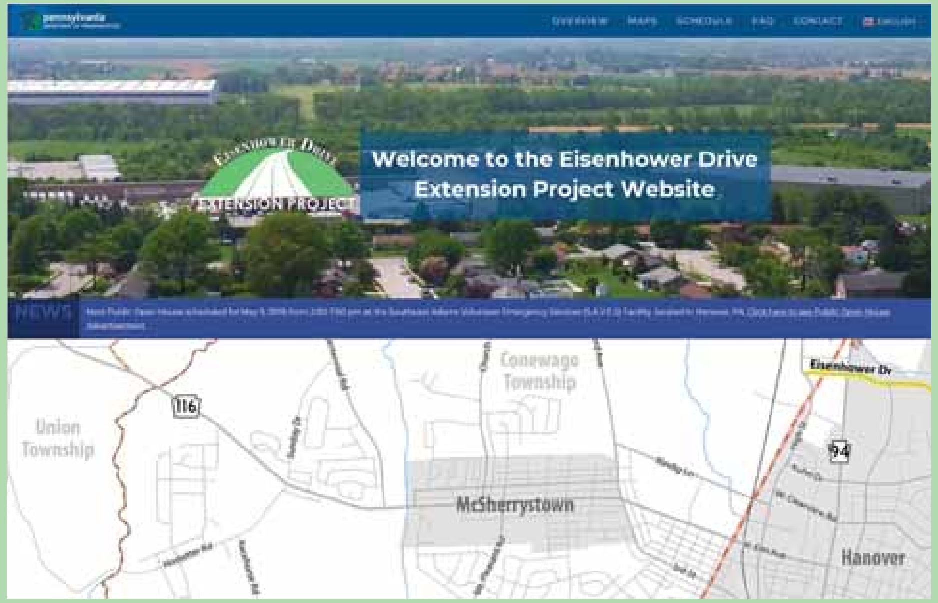
Public Plans Display #1	June 21, 2018
Alternatives Analysis	Fall / Winter 2018
Public Plans Display #2	May 9, 2019
Identify Recommended Preferred Alternative	Spring 2019
Draft Environmental Assessment (EA)*	Fall 2019
Final EA	Spring 2020
Begin Final Design	Spring 2020
Begin Construction	2021 / 2022

* Available to the public to comment on the EA and recommnded preferred alternative

Today's Public Open House Plans Display is not the only time you will be able to provide input.

You can provide continued feedback several different ways:

1. During the public comment period of the Draft Environmental Document
2. Through the project website
3. Contacting PennDOT District 8-0
4. Staying up to date by signing up for project updates on the project website

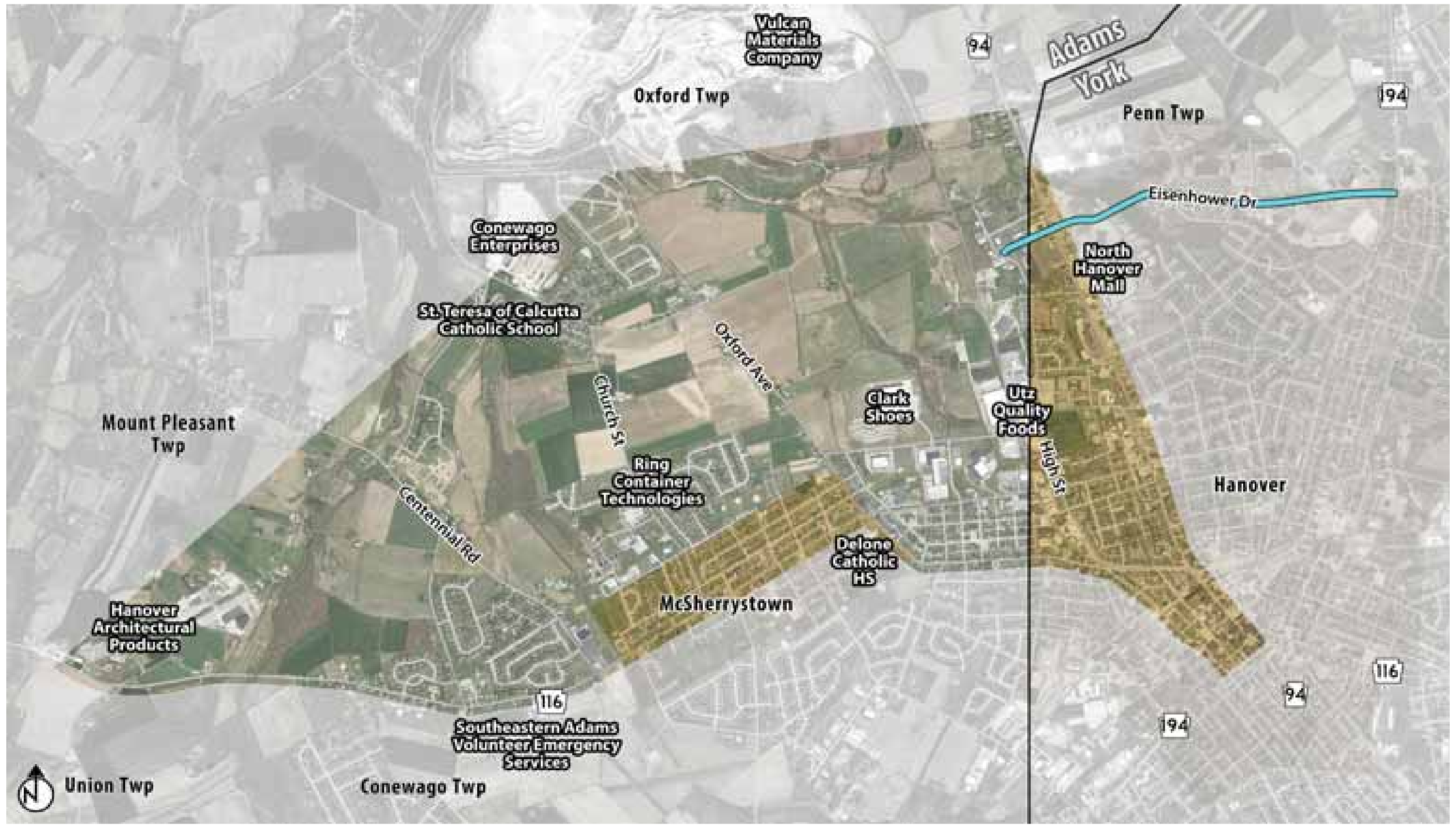


eisenhowerdriveextension.com

Thank you for attending the Eisenhower Drive Extension Public Open House Plans Display.

Please fill out a comment card or take one with you and mail your comments in at your convenience.

PROJECT LOCATION MAP



PROJECT DESCRIPTION & MEETING PURPOSE

The Pennsylvania Department of Transportation (PennDOT) in coordination with the Federal Highway Administration (FHWA) welcomes you to the Public Open House Plans Display for the Eisenhower Drive Extension Project.

The Eisenhower Drive Extension Project is intended to provide transportation improvements aimed at addressing the traffic congestion and safety concerns within the study area. The project involves investigating project alternatives including improvements to the local existing roadway network as well as the potential to extend Eisenhower Drive through Conewago Township, from where it currently ends at High Street to Hanover Road (SR 116) west of McSherrystown. The project will consider traffic congestion and traffic safety, regional and local travel patterns, community connectivity, and avoidance and minimization of impacts.

The purpose of today's open house plans display will focus on the identification of the alternatives being carried forward for in-depth review and development.

U.S. Department of Transportation Federal Highway Administration
pennsylvania DEPARTMENT OF TRANSPORTATION

EISENHOWER DRIVE
EXTENSION PROJECT

PUBLIC OPEN HOUSE PLANS DISPLAY
GENERAL INFORMATION

ALTERNATIVES

The following Alternatives will be carried forward in the Environmental Assessment for further analysis:

1. No Build Alternative

a. The No Build alternative would consist of taking no action to improve the traffic or roadway system in the community.

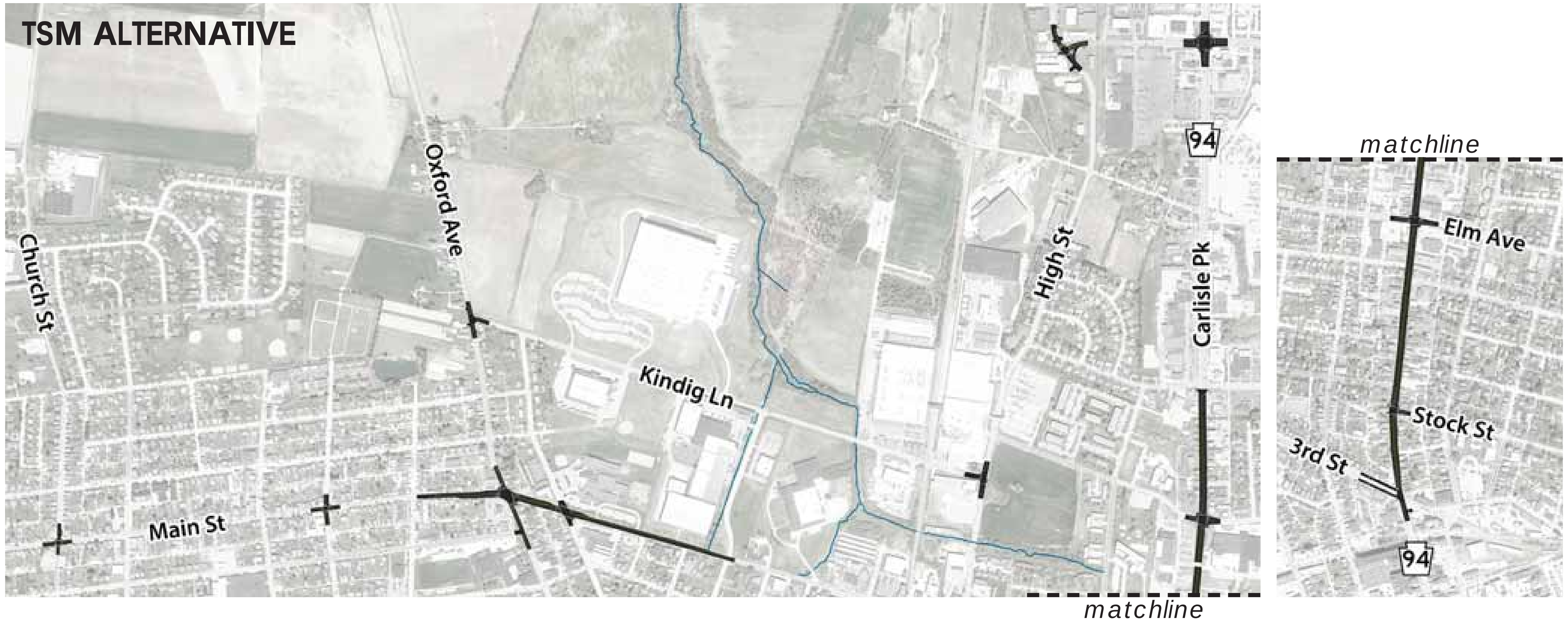
2. Transportation System Management (TSM) Alternative

a. Evaluates preserving capacity through Traffic Management and Transit Management Strategies.

b. The TSM alternative would consist of updating the existing roadway network by improving turning movements, potential widening of existing roadways, installing new intersection signals, potential roundabouts and other roadway network improvements.

3. Off-Alignment Build Alternative (5C)

a. The Off-alignment Build Alternative extends Eisenhower Drive from its existing terminus at High Street to SR 116 on new alignment throughout the project area.


TSM ALTERNATIVE


ALTERNATIVE 5C

WELCOME TO THE EISENHOWER DRIVE EXTENSION PROJECT OPEN HOUSE PLANS DISPLAY

Station 1: Welcome & Registration

Station 2: Pre-Recorded Presentation

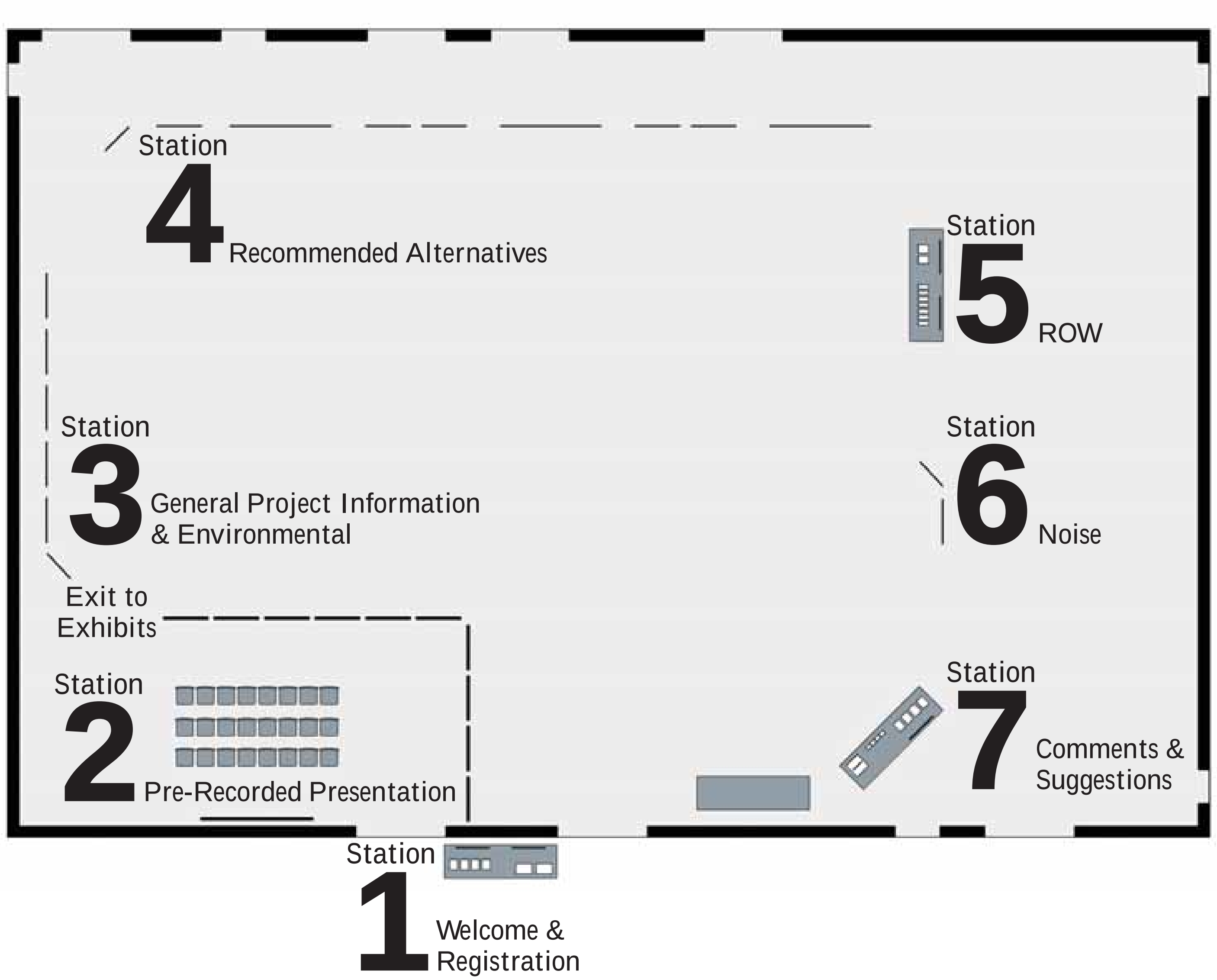
Station 3: General Project Information & Environmental

Station 4: Recommended Alternatives

Station 5: ROW

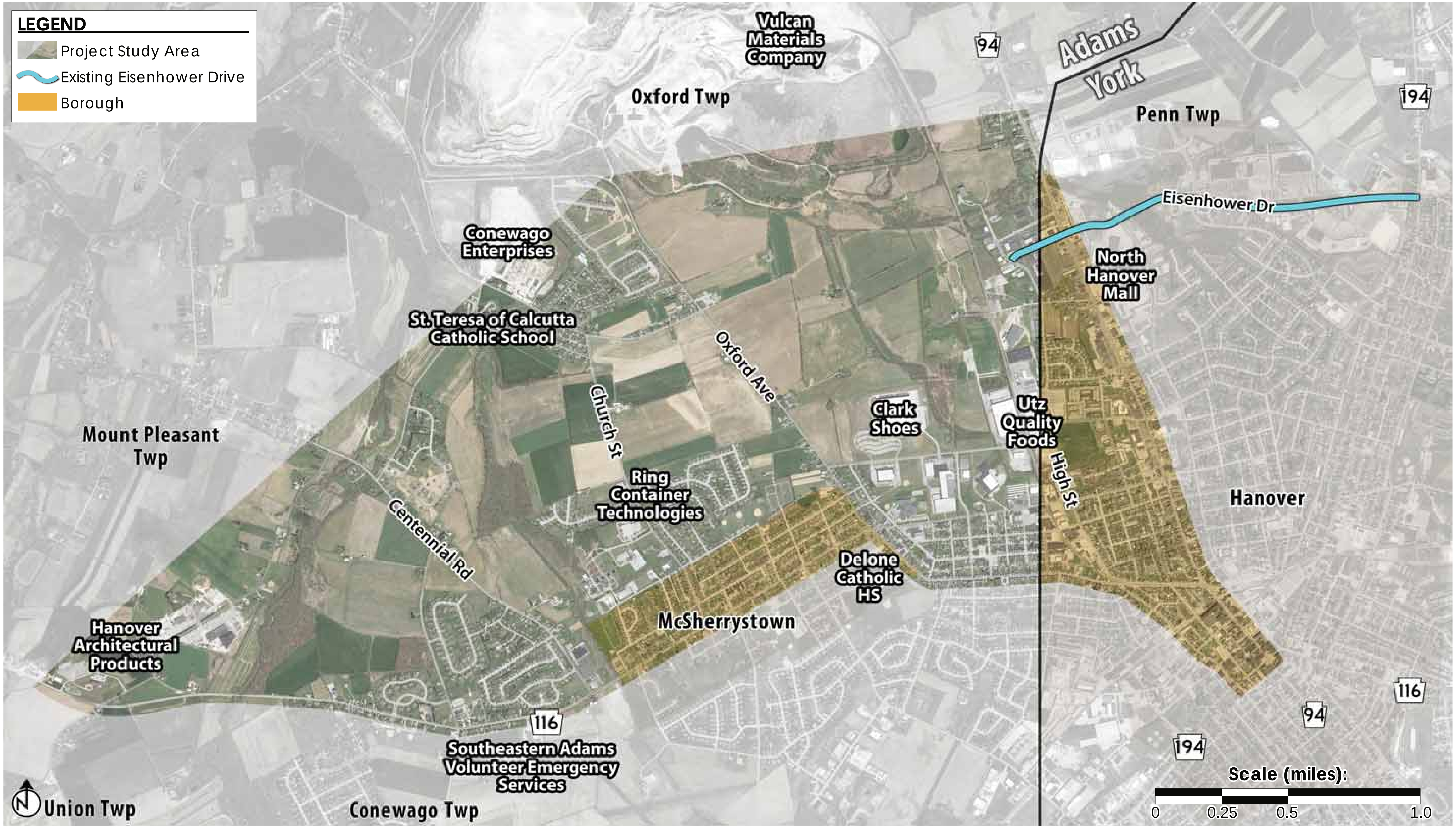
Station 6: Noise

Station 7: Comments & Suggestions



EISENHOWER DRIVE
EXTENSION PROJECT

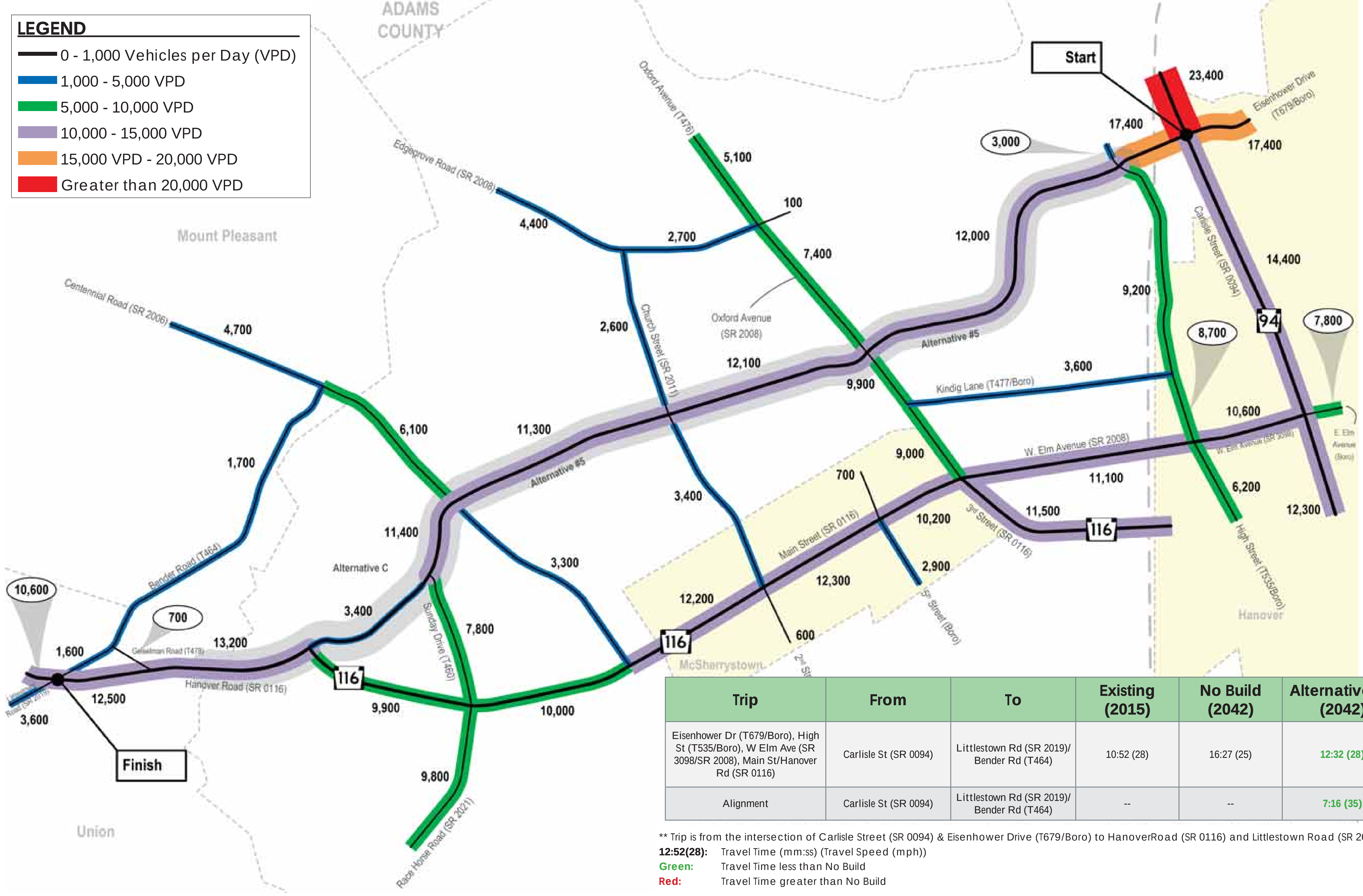
PROJECT LOCATION



EISENHOWER DRIVE EXTENSION PROJECT

2042 DESIGN YEAR ALTERNATIVE 5C

AADT & TRAVEL TIMES



Trip	From	To	Existing (2015)	No Build (2042)	Alternative 5C (2042)
Eisenhower Dr (T679/Boro), High St (T535/Boro), W Elm Ave (SR 3098/SR 2008), Main St/Hanover Rd (SR 0116)	Carlisle St (SR 0094)	Littlestown Rd (SR 2019)/ Bender Rd (T464)	10:52 (28)	16:27 (25)	12:32 (28)
Alignment	Carlisle St (SR 0094)	Littlestown Rd (SR 2019)/ Bender Rd (T464)	--	--	7:16 (35)

** Trip is from the intersection of Carlisle Street (SR 0094) & Eisenhower Drive (T679/Boro) to HanoverRoad (SR 0116) and Littlestown Road (SR 2019)

12:52(28): Travel Time (mm:ss) (Travel Speed (mph))

Green: Travel Time less than No Build

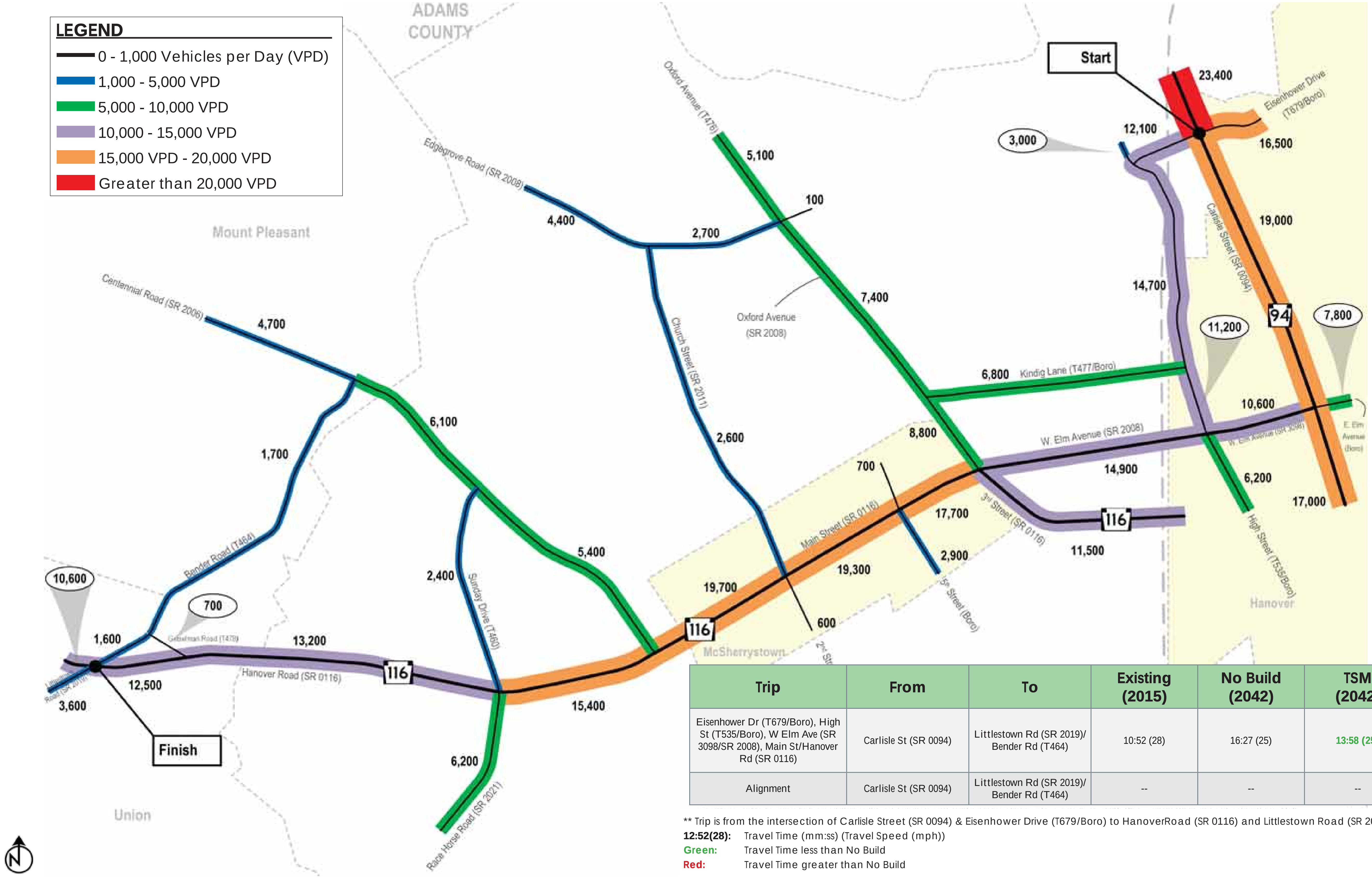
Red: Travel Time greater than No Build

U.S. Department of Transportation Federal Highway Administration
pennsylvania DEPARTMENT OF TRANSPORTATION

EISENHOWER DRIVE EXTENSION PROJECT

2042 DESIGN YEAR NO BUILD/TSM

AADT & TRAVEL TIMES



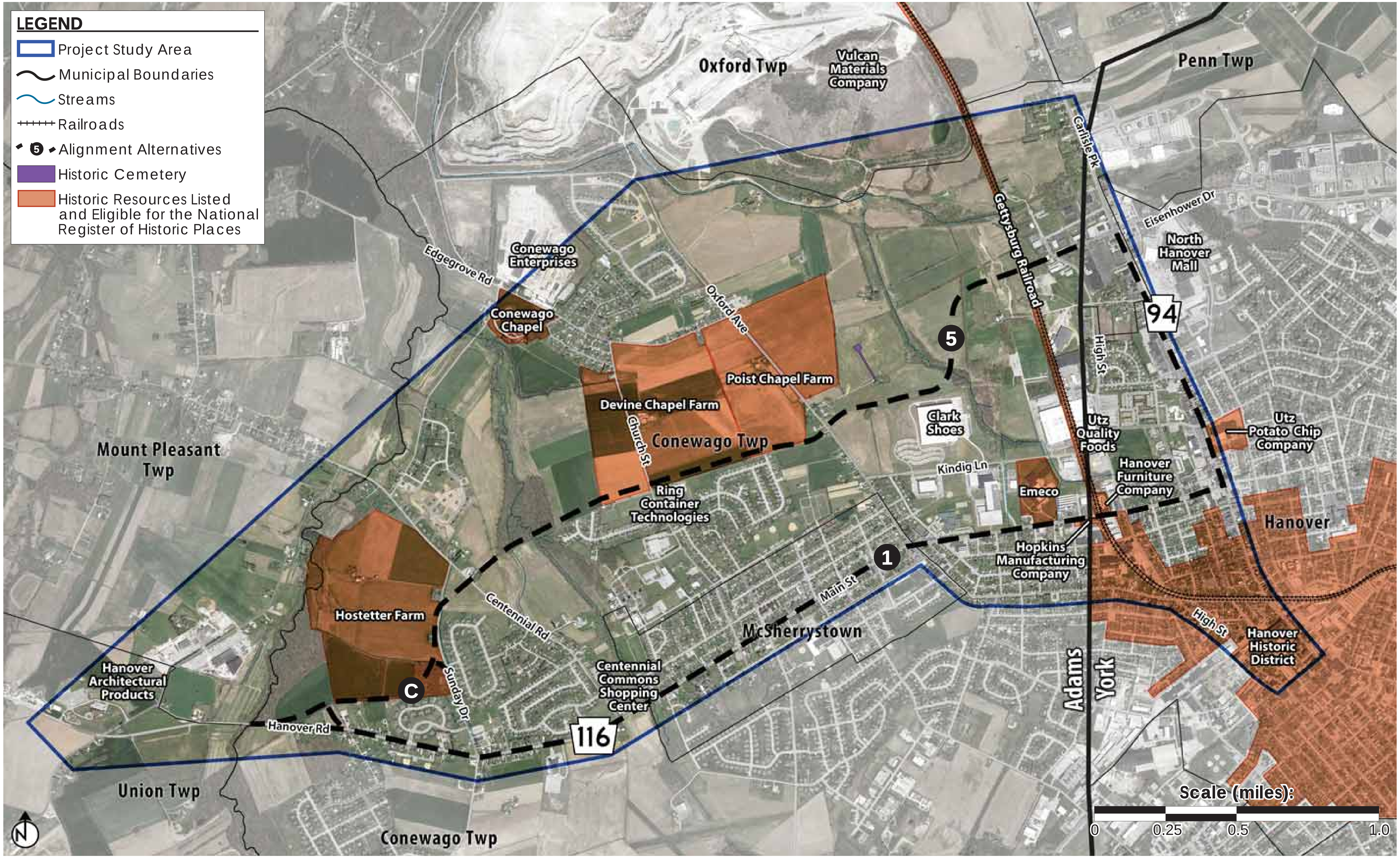
Trip	From	To	Existing (2015)	No Build (2042)	TSM (2042)
Eisenhower Dr (T679/Boro), High St (T535/Boro), W Elm Ave (SR 3098/SR 2008), Main St/Hanover Rd (SR 0116)	Carlisle St (SR 0094)	Littlestown Rd (SR 2019)/ Bender Rd (T464)	10:52 (28)	16:27 (25)	13:58 (25)
Alignment	Carlisle St (SR 0094)	Littlestown Rd (SR 2019)/ Bender Rd (T464)	--	--	--

** Trip is from the intersection of Carlisle Street (SR 0094) & Eisenhower Drive (T679/Boro) to HanoverRoad (SR 0116) and Littlestown Road (SR 2019)

12:52(28): Travel Time (mm:ss) (Travel Speed (mph))
Green: Travel Time less than No Build
Red: Travel Time greater than No Build

Eisenhower Drive
EXTENSION PROJECT

CULTURAL RESOURCES



Public Open House Plans Display - May 9, 2019

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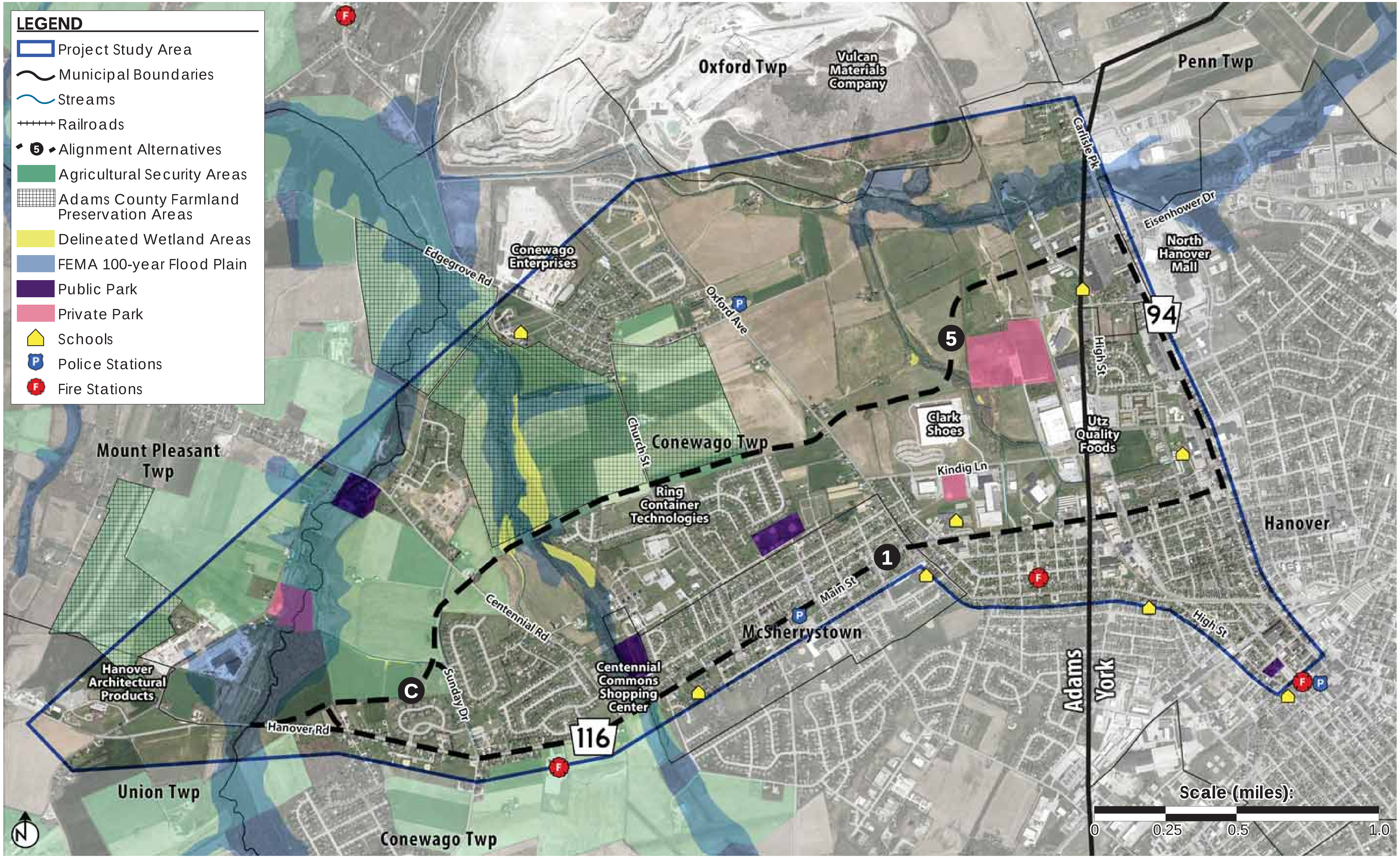
EISENHOWER DRIVE EXTENSION PROJECT

ENVIRONMENTAL FEATURES



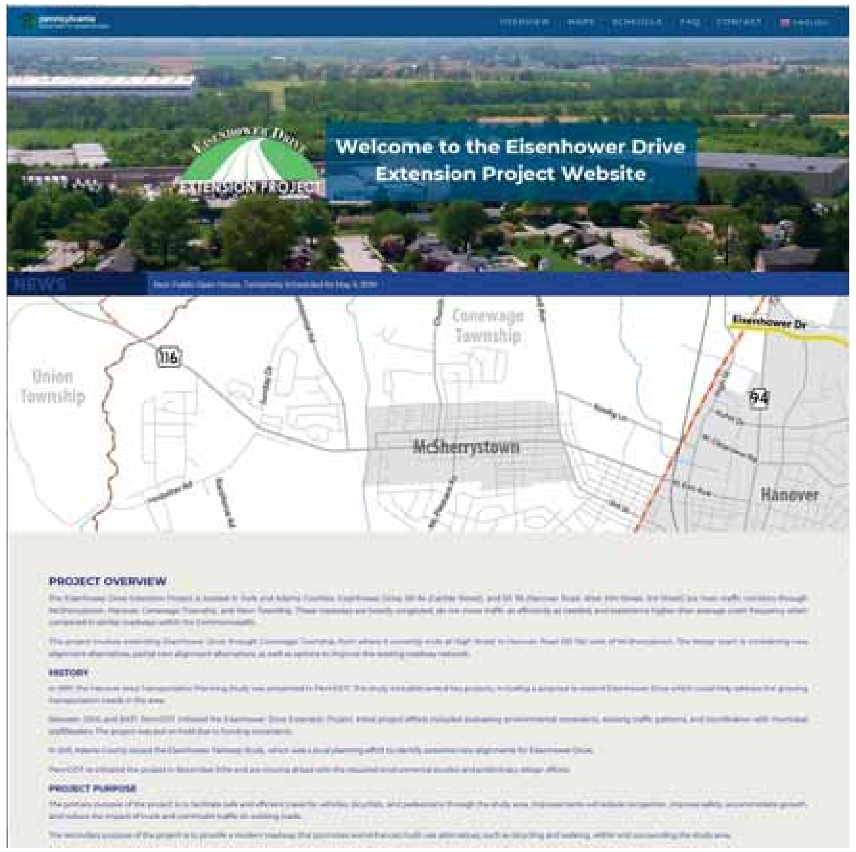
Public Open House Plans Display - May 9, 2019

PUBLIC INVOLVEMENT

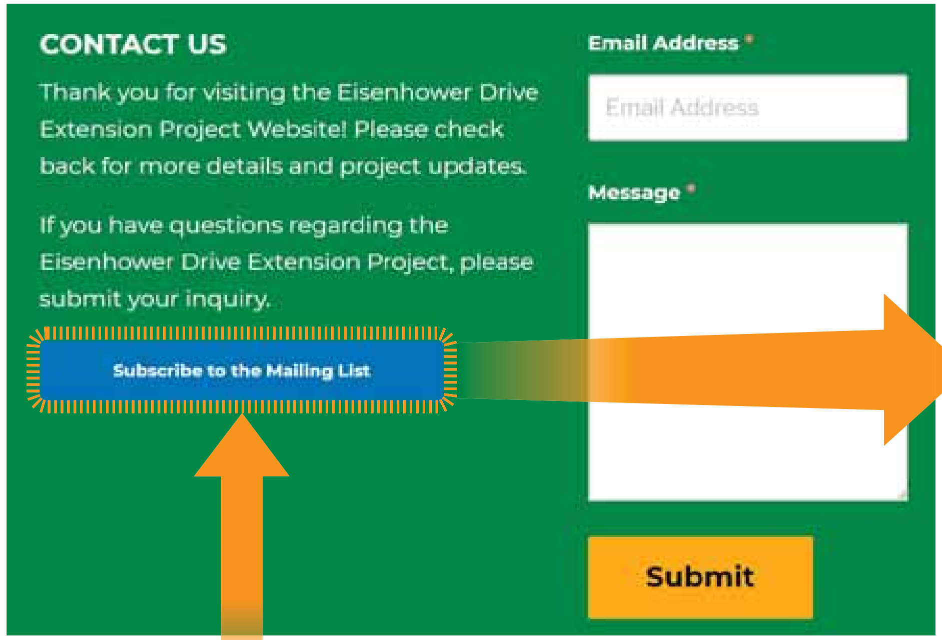
Stay Informed

As the projects progress there will be more updates and information to be provided. For additional information, contact:
Ben Singer, PennDOT Design Manager at 717-787-6690.
To stay informed, visit our project website and sign up for project related email updates.

eisenhowerdriveextension.com



Subscribe Today



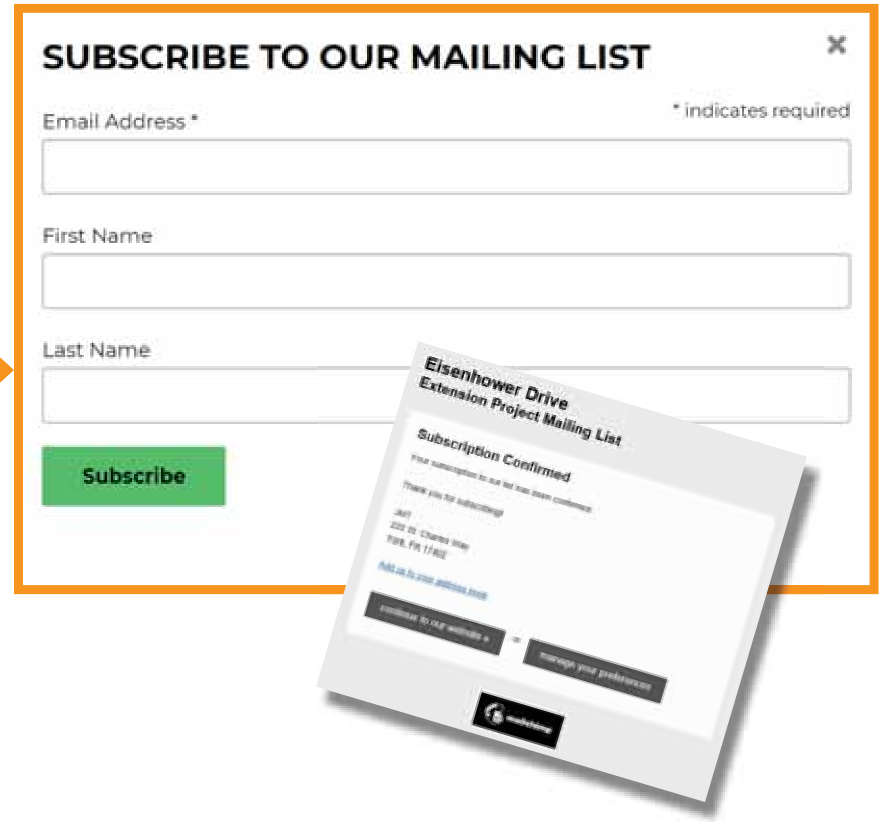
CONTACT US

Thank you for visiting the Eisenhower Drive Extension Project Website! Please check back for more details and project updates.

If you have questions regarding the Eisenhower Drive Extension Project, please submit your inquiry.

Click Here

Email Updates



SUBSCRIBE TO OUR MAILING LIST

* indicates required

EISENHOWER DRIVE EXTENSION PROJECT

PROJECT SCHEDULE

Public Plans Display #1	June 21, 2018
Alternatives Analysis	Fall / Winter 2018
Public Plans Display #2	May 9, 2019
Identify Recommended Preferred Alternative	Spring 2019
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Final EA	Spring 2020
Begin Final Design	Spring 2020
Begin Construction	2021 / 2022

* Available to the public to comment on the EA and recommnded preferred alternative

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EISENHOWER DRIVE
EXTENSION PROJECT

ALTERNATIVE DISMISSAL

Alternatives	Conceptual Preliminary Alternatives Analysis	Alternatives Retained for Environmental Assessment Document	Summary of Analysis	Does Not Meet Project Need	Has Excessive Impacts
No Build Alternative	→	→	The No-Build Alternative will be carried forward for detailed analysis as a part of the Environmental Assessment Document		
On-Line Alternatives					
Transportation Systems Management (TSM) Alternative	→	→	The TSM Alternative will be carried forward for detailed analysis as a part of the Environmental Assessment Document		
Off-Alignment Alternatives					
Alternative 3	→		Alternative 3 would result in larger impacts to both Agricultural Security Areas and preserved farmland, as compared to Alternative 5. In addition, alternative 3 would bisect these agricultural resources, resulting in divided agricultural operations. Alternative 3 would also bisect two National Register of Historic Places (NRHP) eligible resources. The result would likely be a finding of adverse effect on both resources. Overall, Alternative 3 displays the most potential for impacts to historic resources, Section 4(f) resources, and agricultural resources.		X
Alternative 4	→		Alternative 4 would bisect one National Register of Historic Places (NRHP) eligible resource. The result would likely be a finding of adverse effect for this resource. Alternative 4 demonstrated similar impacts as alternative 3, though to a slightly lesser degree. However, the impacts are still large, especially when compared to alternative 5. Also, the public support for alternative 4 is minimal from the municipal and county level, as well as the general public.		X
Alternative 5	→	→	Alternative 5 will be carried forward as the preferred Off-Alignment Alternative. Alternative 5 is less impactive to Agricultural, Section 4(f), and Historic Resources.		
Sub Alternative B	→		Sub-Alternative B was not supported by the Municipalities, County, or General Public. Sub Alternative B would increase traffic along Sunday Drive and require significant improvements at the intersection of Sunday Drive and Race Horse Road.	X	
Sub Alternative C	→	→	Sub-Alternative C will be carried forward as a part of the Preferred Off-Alignment Alternative.		

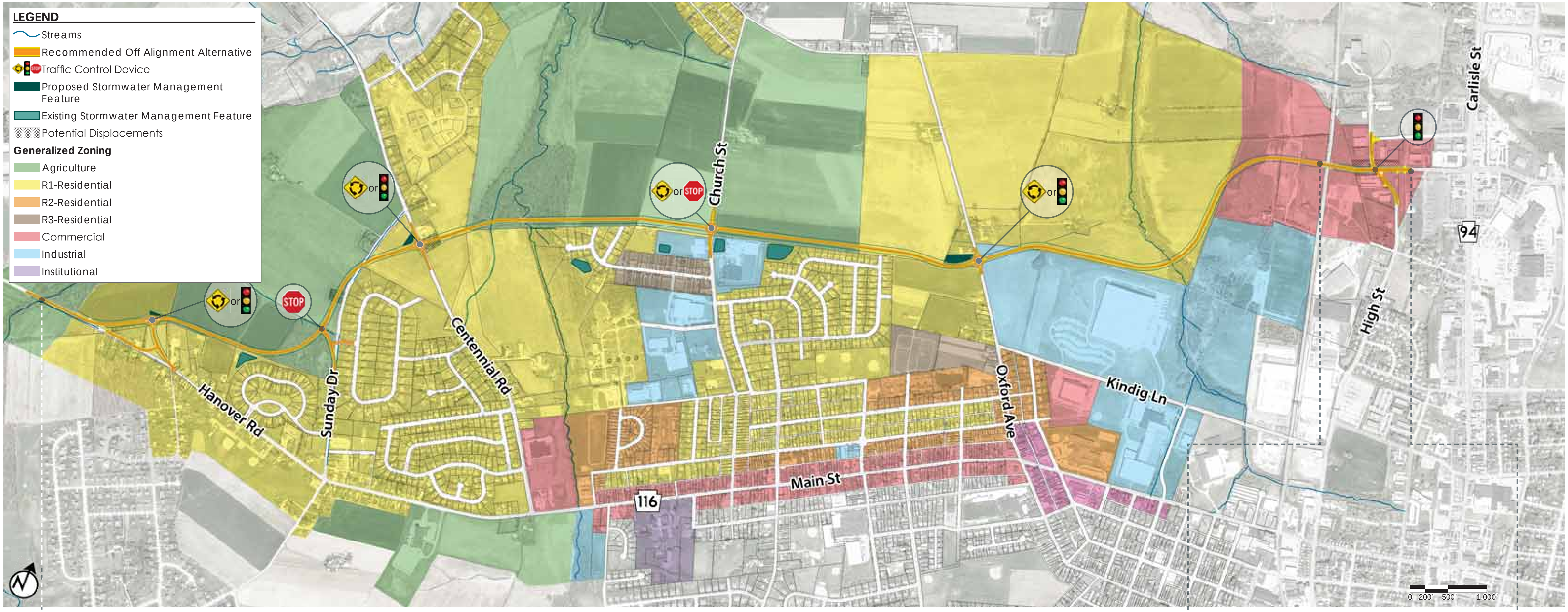
ALTERNATIVES

The following Alternatives will be carried forward in the Environmental Assessment for further analysis:

Description	Costs (Million $)		Potential Displacements
No Build Alternative			
a. The No Build alternative would consist of taking no action to improve the traffic or roadway system in the community.	Construction	$0	0
	Right-of-Way	$0	
	Total	$0	
Transportation System Management (TSM) Alternative			
a. Evaluates preserving capacity through Traffic Management and Transit Management Strategies. b. The TSM alternative would consist of updating the existing roadway network by improving turning movements, potential widening of existing roadways, installing new intersection signals, potential roundabouts and other roadway network improvements.	Construction	$11 - 13	53
	Right-of-Way	$14 - $16	
	Total	$25 - $29	
Off-Alignment Build Alternative (5C)			
a. The Off-alignment Build Alternative extends Eisenhower Drive from its existing terminus at High Street to SR 116 on new alignment throughout the project area.	Construction	$25 - $27	7
	Right-of-Way	$9 - $10	
	Total	$34 - $37	

EISENHOWER DRIVE
EXTENSION PROJECT

RECOMMENDED OFF ALIGNMENT ALTERNATIVE



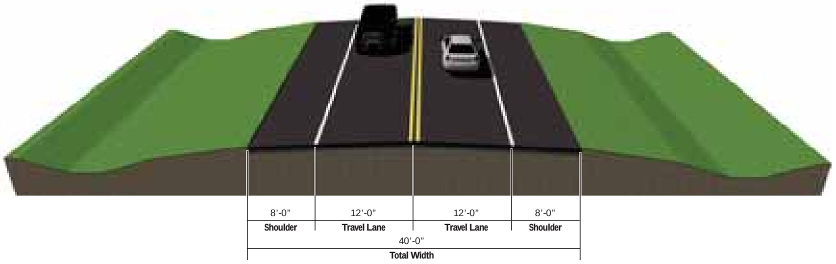
LEGEND

- Streams
- Recommended Off Alignment Alternative
- Traffic Control Device
- Proposed Stormwater Management Feature
- Existing Stormwater Management Feature
- ▨ Potential Displacements

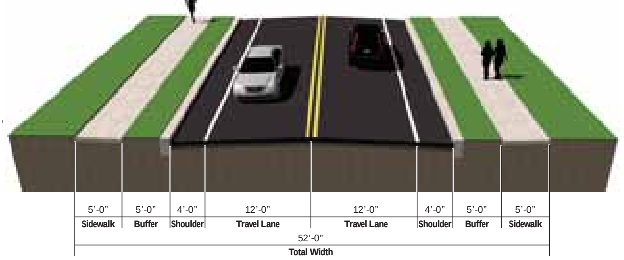
Generalized Zoning

- 🟩 Agriculture
- 🟨 R1-Residential
- 🟧 R2-Residential
- 🟫 R3-Residential
- 🟥 Commercial
- 🟦 Industrial
- 🟪 Institutional

Rural Corridor



Suburban Center Corridor



Public Open House Plans Display - May 9, 2019

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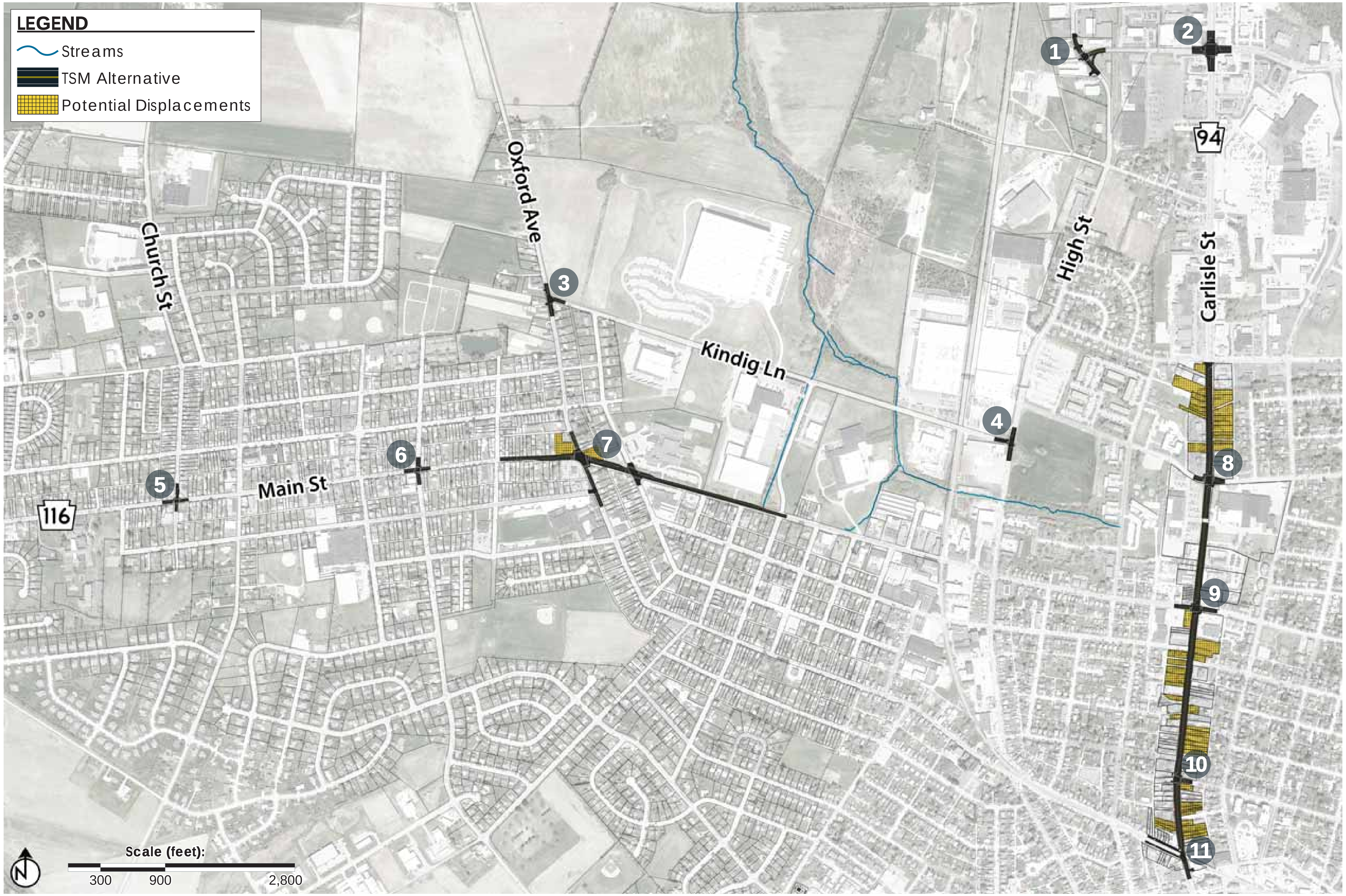
EISENHOWER DRIVE
EXTENSION PROJECT

TSM ALTERNATIVE



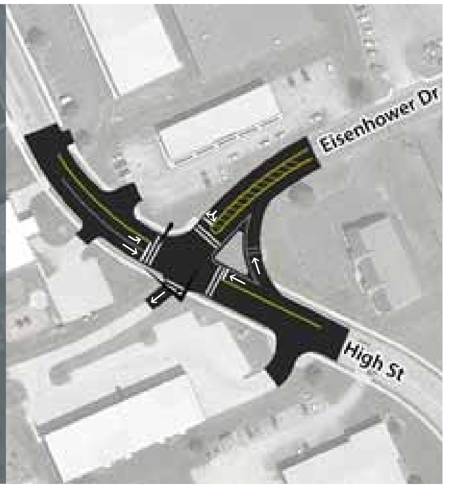
EISENHOWER DRIVE
EXTENSION PROJECT

TSM ALTERNATIVE

1

High Street & Eisenhower Drive

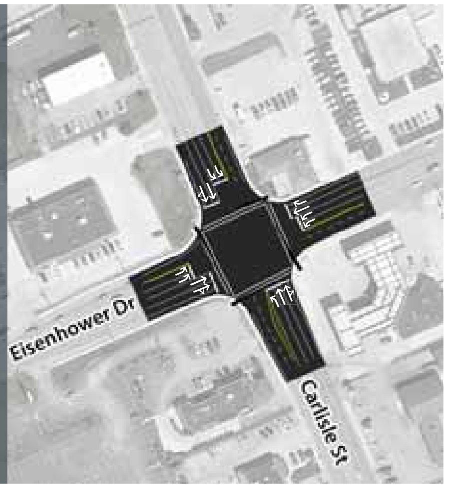
- Install new traffic signal
- Construct SB left turn lane
- Channelize NB right turn with yield



2

Carlisle Street (SR 0094) & Eisenhower Drive

- Revise existing signal timing



3

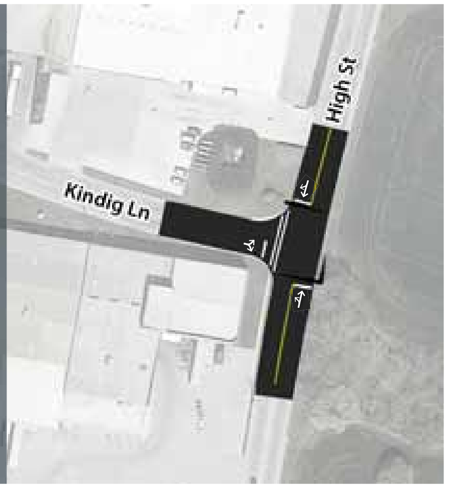
Oxford Avenue (SR 2008) & Kindig Lane

- Convert to all-way stop controlled

4

High Street & Kindig Lane

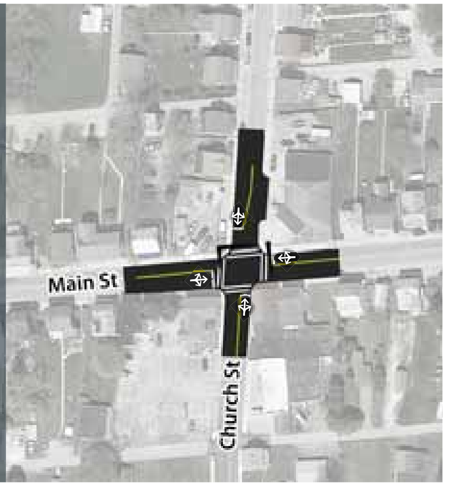
- Install new traffic signal



5

Main Street (SR 0116) & 2nd Street

- Install new traffic signal



6

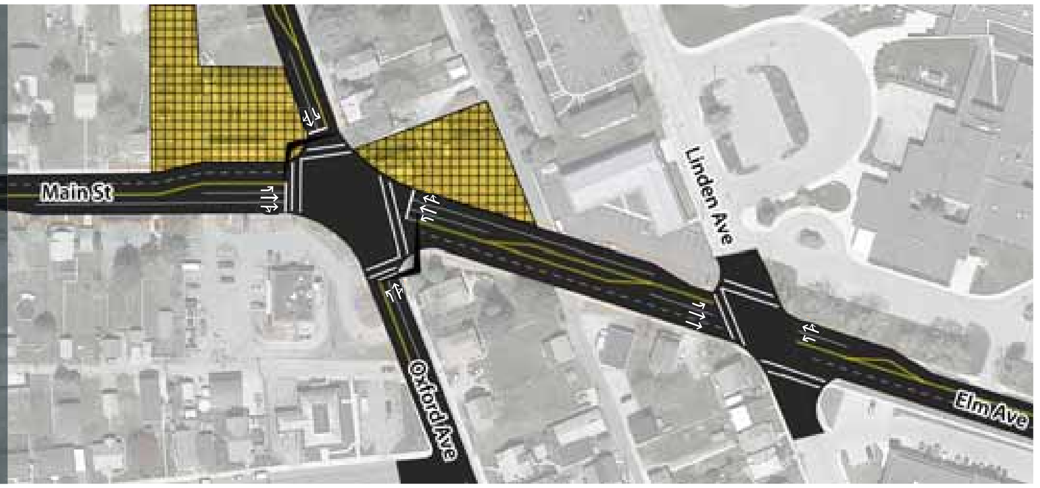
Main Street (SR 0116) & 5th Street

- Install new traffic signal

7

Main Street (SR 0116) & Oxford Avenue (SR 2008)

- Construct additional EB through lane
- Construct additional WB through lane
- Construct EB left turn lane
- Construct WB left turn lane
- Construct SB left turn lane
- Reconstruct existing signal



8

Clearview Road & Carlisle Street (SR 0094)

- Construct additional NB through lane
- Construct additional SB through lane
- Reconstruct existing signal

9

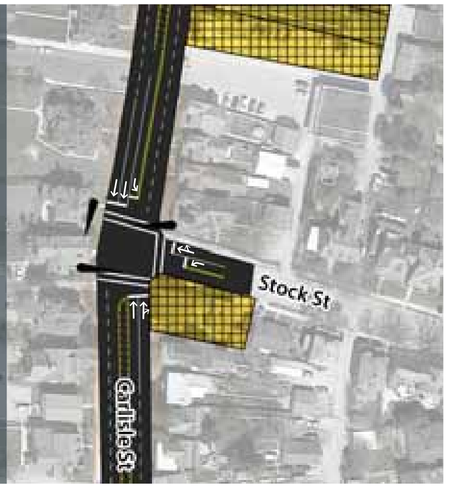
Elm Avenue (SR 3098) & Carlisle Street (SR 0094)

- Construct additional NB through lane
- Construct additional SB through lane
- Reconstruct existing signal

10

Stock Street & Carlisle Street (SR 0094)

- Construct additional NB through lane
- Construct additional SB through lane
- Reconstruct existing signal



11

3rd Street & Carlisle Street (SR 0094)

- Southern terminus of Carlisle Street (SR 0094) widening

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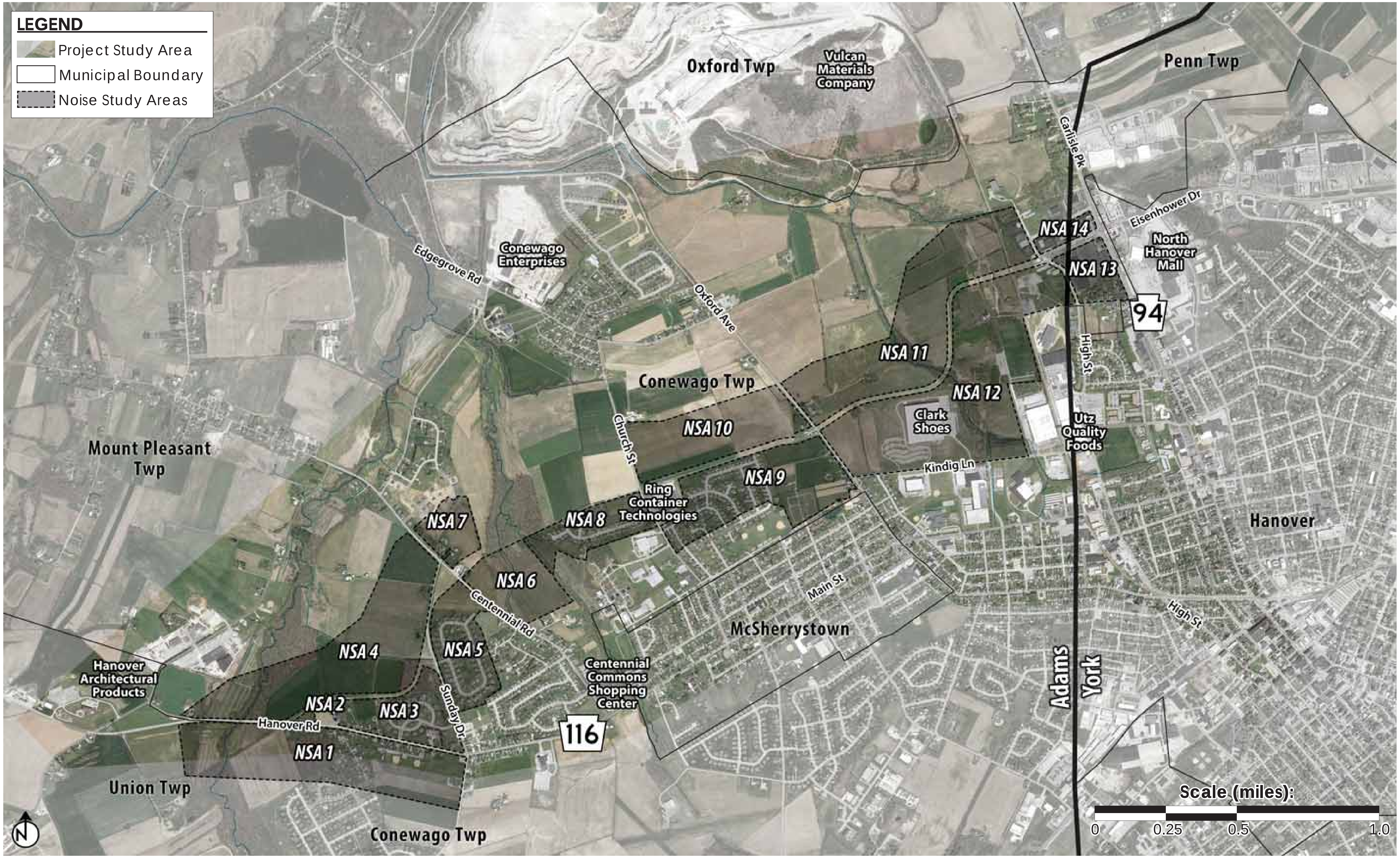
EISENHOWER DRIVE
EXTENSION PROJECT

NOISE ASSESSMENT:
RECOMMENDED OFF ALIGNMENT ALTERNATIVE



Public Open House Plans Display - May 9, 2019

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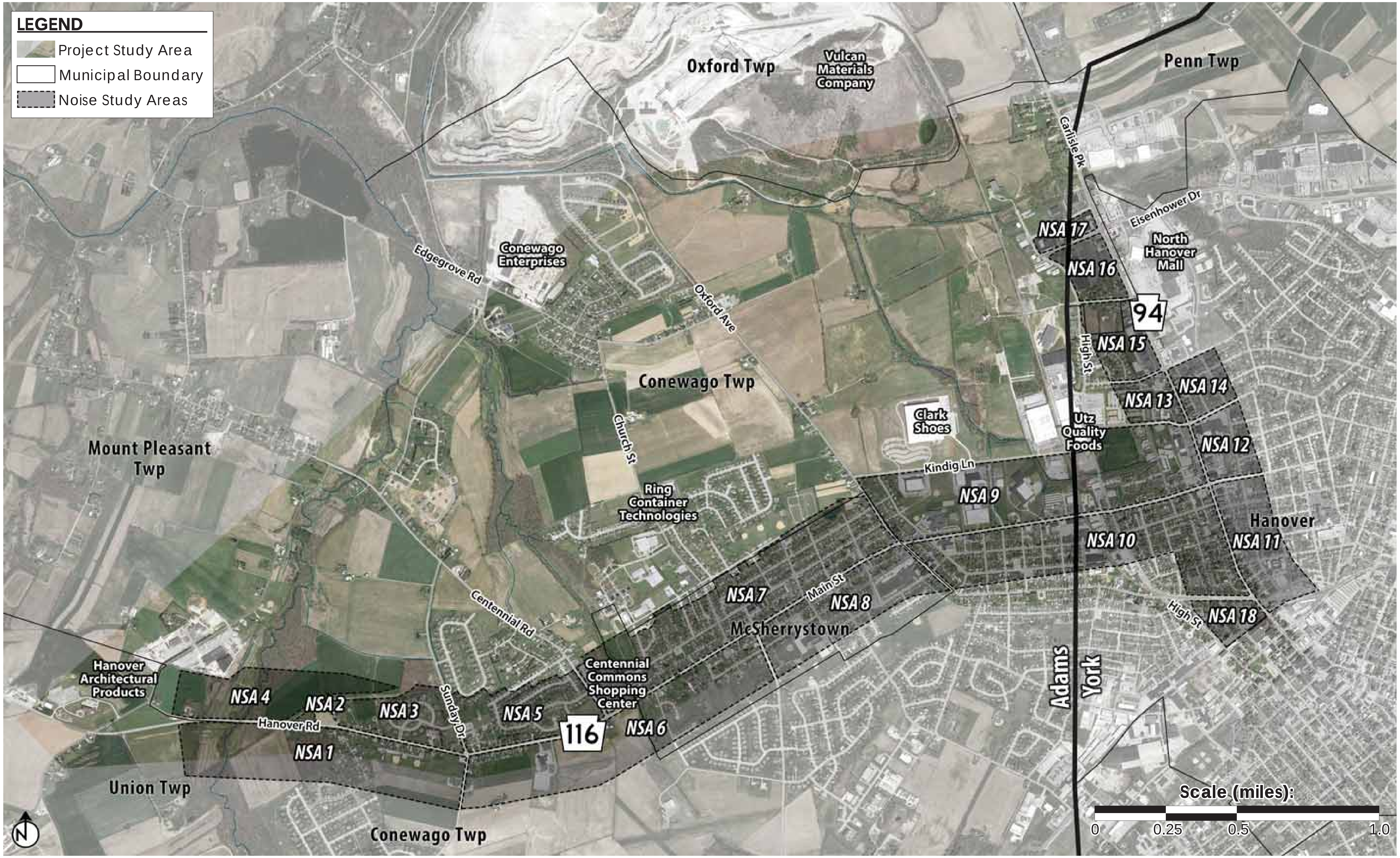
EISENHOWER DRIVE
EXTENSION PROJECT

NOISE ASSESSMENT:
TSM ALTERNATIVE



EISENHOWER DRIVE
EXTENSION PROJECT

PUBLIC OPEN HOUSE PLANS DISPLAY COMMENT FORM

1. Name and Address (Optional) ______________________________

____

2. Which municipality do you live in? ______________________________

3. How did you hear about the Public Open House Plans Display? (Check one)

______ Project Website ______ Municipal Website ______ Newspaper / Media

______ Other ____

4. Which alternative do you prefer? (Check one)

______ No Build ______ Alternative 5C

______ Transportation System Management (TSM) Alternative

5. Why do you prefer the alternative you chose? ______________________________

____

____

____

6. General Comments: ____

____

____

____

____

____

____

**** Please return comment form by June 7, 2019***

Place
Postage
Here

JMT, Inc. Attn: Neil Beach
220 St. Charles Way, Suite 200
York, PA 17402

Appendix K

TRANSPORTATION SYSTEMS MANAGEMENT ALTERNATIVE

PRELIMINARY TRAFFIC NOISE SCREENING REPORT

EISENHOWER DRIVE EXTENSION PROJECT
TRANSPORTATION SYSTEMS MANAGEMENT ALTERNATIVE
HANOVER AND ADAMS COUNTIES, PENNSYLVANIA

E00187 PART 12
MPMS NO. 58137

Prepared For:
Johnson, Mirmiran & Thompson, Inc.
and
Engineering District 8-0

Prepared By:
SUSQUEHANNA CIVIL
ENGINEERING & ENVIRONMENTAL CONSULTING
50 Grumbacher Road, Suite 10
York, PA 17406

MAY 2019

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

The Eisenhower Drive Extension Project is intended to provide transportation improvements aimed at addressing the traffic congestion and safety concerns within the study area. The project involves investigating project alternatives including improvements to the local existing roadway network as well as the potential to extend Eisenhower Drive through Conewago Township, from where it currently ends at High Street to Hanover Road (SR 0116) west of McSherrystown. The project considers traffic congestion and traffic safety, regional and local travel patterns, community connectivity, and avoidance and minimization of impacts.

The project is located in Conewago Township and McSherrystown Borough, Adams County and Hanover Borough, York County, Pennsylvania. On-Alignment Transportation Systems Management Alternative (TSM Alternative) is being considered as an alternative to extending Eisenhower Drive. The design team is considering new off-alignment alternatives and partial new alignment alternatives, as well as options to improve the existing roadway network.

A detailed noise analysis was chosen for the Off-Alignment Build Alternative (Alternative 5C) because noise impacts were anticipated along this new section of roadway. Model validation and noise monitoring were conducted for Alternative 5C and results are included in the preliminary technical noise report.

A noise screening analysis was chosen for the TSM Alternative because noise abatement is clearly not feasible (i.e. Main Street scenario) along the SR 0116 / SR 0094 corridor. Model validation and noise monitoring are not required for a screening analysis and therefore are not included in this screening level report.

The TSM Alternative extends from the signalized intersection of SR 0116 (Main Street) and 2nd Street, through McSherrystown, to the signalized intersection of SR 3098 (Elm Street) and SR 0094 (Carlisle Street), then extends northward on SR 0094 to the signalized intersection at Eisenhower Drive. It also extends south on SR 0094 to the signalized intersection at High Street / 3rd Street in Hanover Borough.

Noise screening modeling was performed using Traffic Noise Model (TNM) Version 2.5 in accordance with the United States Code of Federal Regulations (CFR), Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise and PennDOT Publication No. 24, Project Level Highway Traffic Noise Handbook.

The 2015 Existing Worst-Case and 2042 Build Conditions were modeled and documented as a part of this Preliminary Engineering Traffic Noise Screening Report. Mitigation options are discussed with respect to feasibility and reasonableness within the Noise Study Areas (NSAs) that warrant abatement consideration in accordance with Federal Highway Administration (FHWA) and Pennsylvania Department of Transportation (PennDOT) noise abatement criteria.

Preliminary mitigation options were evaluated for 10 out of 18 NSAs that warrant abatement. Upon further analysis, these options were found to be not feasible in accordance with FHWA and PennDOT noise abatement criteria.

2.0 INTRODUCTION

2.1 Background and Project Location

The purpose of this Noise Screening Report is to assess and document potential noise impacts associated with the study area and to determine if mitigation is warranted, feasible, and reasonable by analyzing the selected roadway alignments for Existing Worst-Case Conditions and Future Design Year Build Conditions.

A screening analysis was chosen for this Type I project because noise impacts were not anticipated, and abatement is clearly not feasible (i.e. Main Street scenario) along the SR 0116 and SR 0094 TSM Alternative route. Model validation and noise monitoring are not required for a screening analysis and, therefore, are not included in this report.

An initial site visit was made in December 2018 to establish Noise Study Areas (NSAs), verify Land Use, sensitive areas, and locations of buildings. The study area extends along SR 0116 and SR 0094 (**Figure 1**).

2.2 Project Purpose and Description

The primary purpose of the project is to address the traffic congestion and safety concerns within the project study area to meet both current and future transportation needs of the area. Anticipated transportation improvements will reduce congestion and accommodate for planned growth throughout this portion of the region, including a reduction in impacts of truck and commuter traffic within the study area.

JMT's general proposed TSM Alternative roadway improvements are shown in **Appendix IV** and outlined as follows:

1. Main Street (SR 0016) and 2nd Street (SR 2011)
   – Install new traffic signal
2. Main Street (SR 0016) and 5th Street
   – Install new traffic signal
3. Oxford Ave (SR 2008) and Kindig Lane
   – Convert to all-way stop controlled
4. High Street and Kindig Lane
   – Install new traffic signal
5. High Street and Eisenhower Drive
   – Install new traffic signal

  - Construct southbound (SB) left turn lane
  - Channelize northbound (NB) right turn with yield

6. Carlisle Street (SR 0094) and Eisenhower Drive
  - Revise existing signal timings only
7. Main Street (SR 0116) and Oxford Avenue (SR 2008)
  - Construct additional eastbound through lane
  - Construct additional westbound through lane
  - Construct eastbound left turn lane
  - Construct westbound left turn lane
  - Construct southbound left turn lane
  - Reconstruct existing signal
8. Elm Avenue (SR 3038) and Carlisle Street (SR 0094)
  - Construct additional northbound through lane
  - Construct additional southbound through lane
  - Reconstruct existing signal
9. Carlisle Street (SR 0094) and Clearview Road
  - Construct additional northbound through lane
  - Construct additional southbound through lane
  - Reconstruct existing signal
10. Carlisle Street (SR 0094) and Stock Street
  - Construct additional northbound through lane
  - Construct additional southbound through lane
  - Reconstruct existing signal
11. Carlisle Street (SR 0094) and High Street / 3rd Street
  - Construct additional northbound lane on northern leg
  - Construct additional southbound lane on northern leg
  - Reconstruct existing signal

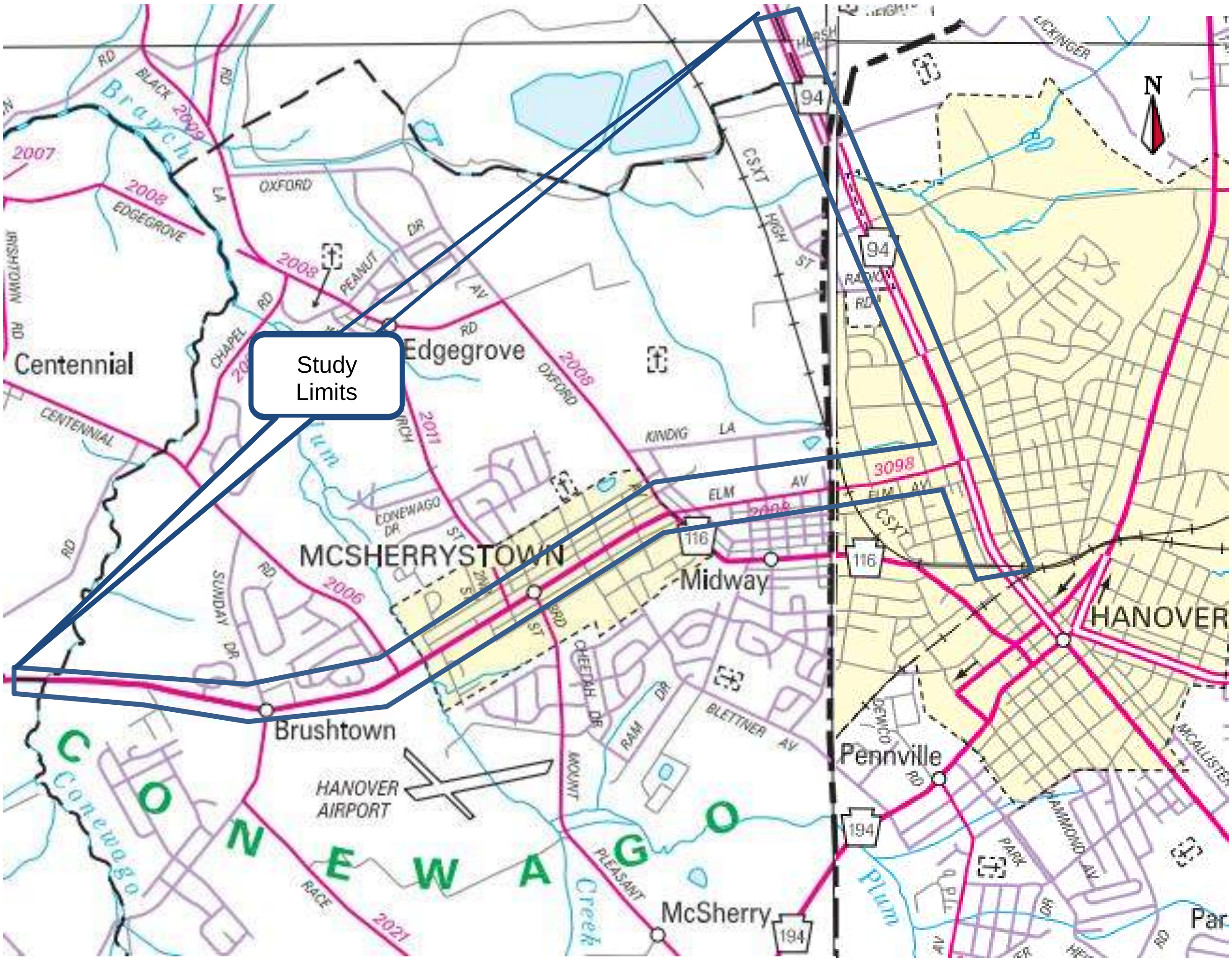


FIGURE 1 – TSM ALTERNATIVE LOCATION MAP
Eisenhower Drive Extension Project
Hanover Borough, McSherrystown Borough, and Conewago Township
Adams and York Counties, Pennsylvania

3.0 METHODOLOGY

This noise screening study has been completed using the methodology described in PennDOT Publication No. 24, Project Level Highway Traffic Noise Handbook (November 2015) and Federal Highway Administration (FHWA) criteria as described in 23 CFR Part 772 for the Design Year of 2042.

3.1 Highway Noise Fundamentals

A discussion on Highway Noise Fundamentals is included, because it helps define many of the terms and criteria utilized in this report.

The extent to which individuals are affected by noise sources is controlled by several factors, including:

- The duration and frequency of sound
- The distance between the sound source and the receiver
- The intervening natural or man-made barriers or structures
- The ambient environment

The level of highway traffic noise depends primarily upon the following:

- The volume of traffic
- The speed of traffic
- The number of trucks in the flow of traffic

Generally, traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. Consequently, the FHWA has established the following vehicle categories to use in traffic noise analysis:

- Heavy duty trucks, defined as vehicles having three or more axles
- Medium duty trucks, defined as vehicles with two axles and six wheels
- Automobiles, defined as vehicles with two axles and four wheels
- Buses
- Motorcycles

Heavy duty trucks typically produce more noise than medium duty trucks traveling at the same speed. Medium duty trucks, in turn, typically generate more noise than automobiles.

Traffic noise is measured and described according to FHWA guidelines, which allows the use of the hourly equivalent sound level (Leq(h)) as the primary descriptor for noise analysis. Leq(h) is defined as the equivalent steady state sound level, which in one hour contains the same acoustic energy as the time-varying sound level during the same one-hour period.

The unit of measure for the Leq is the "A-weighted" decibel (dB(A)). The dB(A) scale de-emphasizes the very low and very high frequencies and emphasizes the middle frequencies, thereby closely approximating the frequency response of the human ear. **Table 1** provides examples of common outdoor noise levels and their respective noise level decibels. To place the noise levels into a context that some people can more easily relate to, **Table 1** also provides the equivalent common indoor noise levels.

Typically, noise level changes between 2 and 3 dB(A) are barely perceptible, while a change of 5 dB(A) is readily noticeable by most people. A 10 dB(A) increase is usually perceived as a doubling of loudness, and conversely, noise is perceived to be reduced by one-half when a sound level is reduced by 10 dB(A).

Table 1 Common Outdoor and Indoor Noise Levels[1]

Common Outdoor Noise Levels	Noise Level Decibels [dB(A)]	Common Indoor Noise Levels
	110	Rock Band
Jet Fly Over at 1,000 feet	100	Inside Subway Train (NY)
Gas Lawn Mower at 3 feet		
Diesel Truck at 50 feet	90	Food Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet or Shouting at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area	60	Normal Speech at 3 feet
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
		Broadcast & Recording Studio
	10	Threshold of Hearing
	0	

1. Adapted from Guide on Evaluation and Attenuation of Traffic Noise, AASHTO-1974.

3.2 Noise Abatement Criteria

The determination of traffic noise impacts is based on the relationship between the 2015 Existing Worst-Case noise levels, 2042 Design Year predicted noise levels, and the established noise abatement criteria for the study area. The effects of noise are determined in accordance with the FHWA guidelines as established by 23 CFR Part 772 and PennDOT Policies. The Federal Noise Abatement Criteria (NAC) provided in **Table 2** are based on specific land uses and are used in determining areas that warrant noise abatement consideration.

Table 2 Hourly Weighted Sound Levels dB(A) For Various Land Use Categories

Land Use Activity Category	Exterior Leq(h)[1]	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[2]	67 (Exterior)	Residential
C[2]	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[2]	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A, B or C.
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.

Source: PennDOT Publication No. 24 dated November 2015
1. *Impact thresholds should not be used as design standards for noise abatement purposes.*
2. *Includes undeveloped lands permitted for this activity category*

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

Based on field reconnaissance and desktop mapping the identified active land uses along the corridor are single-family residences, multi-family residences, motels, school facilities, athletic fields, public parks, a library, places of worship, and medical facilities which are considered Land Use Category B, C, and E as per 23 CFR Part 772.

Per FHWA, an activity in Category B and C are considered to be "impacted" when traffic noise levels approach or exceed 67 dB(A), or when the predicted noise levels are substantially higher than the existing ambient noise levels. In defining the term "approaches," PennDOT has adopted 66 dB(A) as the impact threshold for Category B and C and uses a 10dB(A) increase over existing noise levels to define a substantial increase.

Per FHWA, an activity in Category E is considered to be "impacted" when traffic noise levels approach or exceed 72 dB(A), or when the predicted noise levels are substantially higher than the existing ambient noise levels. In defining the term “approaches,” PennDOT has adopted 71 dB(A) as the impact threshold for Category E and uses a 10dB(A) increase over existing noise levels to define a substantial increase.

This noise study involves proposed highway improvements including additional turn lanes as outlined in Section 2.2, making this a Type I noise analysis. A Type I study is performed when new highways are constructed, existing highways are expanded, or there is a significant change in the horizontal or vertical alignment of the highway. A screening analysis was chosen for this Type I project because noise impacts were not anticipated, and abatement is clearly not feasible (i.e. Main Street scenario) along the length of the TSM Alternative.

4.0 EXISTING HIGHWAY TRAFFIC NOISE ENVIRONMENT

4.1 Noise Study Area Description

Noise Study Areas (NSAs) can be residential as well as non-residential. Residential NSAs include single-family residences, single-family attached residences (townhouses), and multi-family residences (condominiums and apartments) located in neighborhoods adjacent to the project corridor. Non-residential NSAs include motels and hotels, recreation areas, playgrounds, active sports areas, parks, schools, churches, libraries, and hospitals located adjacent to the project corridor.

During Preliminary Analysis, 18 NSAs were defined through the project corridor. **Figure 2** shows the locations of the NSAs.

Noise analysis locations throughout the study area are referred to as “Receivers.” In this screening study, Receivers have been labeled according to the following convention: ‘**S**’ receivers are mixed use receivers. Screening receivers were not measured in the field for validation but were modeled in TNM Version 2.5 for the screening-level 2015 Existing Worst-Case and 2042 Build Conditions.

NSA 1 - (Quadrant represented by Receivers S-1 through S-11) consists of the residential areas and baseball fields on the south side of SR 0116 bounded by the project limits and Sunday Drive. This is a Land Use Activity Category B and C area.

NSA 2 - (Quadrant represented by Receiver S-12) consists of one single-family home on the north side of SR 0116 bounded by the Alternative 5C proposed roadway location. This is a Land Use Activity Category B area.

NSA 3 - (Quadrant represented by Receivers S-13 though S-20) consists of multi-family and single-family homes and businesses on the north side of SR 0116 bounded by the Alternative 5C proposed roadway location and Sunday Drive. This is a Land Use Activity Category B, C, and E area.

NSA 4 - (Quadrant represented by no receivers) consists of undeveloped farm area on the north side of SR 0116 bounded by the Alternative 5C proposed roadway location. This is a Land Use Activity Category G area and will not be modeled in this screening report.

NSA 5 - (Quadrant represented by Receivers S-21 through S-33) consists of single-family residences, religious center, and businesses on the north side of SR 0116 bounded by the Sunday Drive and Centennial Road. This is a Land Use Activity Category B, C, and E area.

NSA 6 - (Quadrant represented by Receivers S-34 through S-49) consists of single-family homes, farmland, and an emergency service building on the south side of SR 0116 bounded by Race Horse Road and N 3rd Street. This is a Land Use Activity Category B, E, and G area.

NSA 7 - (Quadrant represented by Receivers S-50 through S-69, and S-140) consists of single and multi-family residences, businesses, a place of worship, and a school on the north side of SR 0116 bounded by Centennial Road and N Oxford Ave. This is a Land Use Activity Category B, C, and E area.

NSA 8 - (Quadrant represented by Receivers S-70 through S-82) consists of single-family residences, businesses, a school, and athletic fields on the south side of SR 0116 bounded by S 3rd Street and Third Street. This is a Land Use Activity Category B, C, and E area.

NSA 9 - (Quadrant represented by Receivers S-83 through S-97) consists of single and multi-family residences, factories, businesses, and schools on the north side of SR 0116 bounded by N Oxford Avenue and Carlisle Street (SR 0094). This is a Land Use Activity Category B, C, and E area.

NSA 10 - (Quadrant represented by Receivers S-98 through S-121 and S-141 through S-146) consists of single and multi-family residences, factories, businesses, day care facilities, a church, and medical facilities on the south side of SR 0116 bounded by 3rd Street and SR 0094 (Carlisle Street). This is a Land Use Activity Category B, C, and E area.

NSA 11 - (Quadrant represented by Receivers S-122 through S-124 and S-147 through S-156) consists of single and multi-family residences, businesses, and a library on the south side of SR 0116 and east side of SR 0094 bounded by the project limits. This is a Land Use Activity Category B, C, D, and E area.

NSA 12 - (Quadrant represented by Receivers S-125 through S-128) consists of single and multi-family residences and businesses on the east side of SR 0094 bounded by Clearview Road and E Elm Avenue. This is a Land Use Activity Category B and E area.

NSA 13 - (Quadrant represented by Receivers S-129 & S-130) consists of single and multi-family residences, businesses, and National Guard center on the west side of SR 0094 bounded by Kuhn Drive and W Clearview Road. This is a Land Use Activity Category B and E area.

NSA 14 - (Quadrant represented by Receivers S-131 through S-133) consists of single-family homes, businesses, and restaurants on the east side of SR 0094 bounded by Dart Drive and Clearview Road. This is a Land Use Activity Category B and E area.

NSA 15 - (Quadrant represented by Receivers S-134 through S-137) consists of single-family homes, businesses, and restaurants on the west side of SR 0094 bounded by Radio Road, High Street, and Dart Drive. This is a Land Use Activity Category B and E area.

NSA 16 - (Quadrant represented by Receivers S-138) consists of single-family homes, businesses, and restaurants on the west side of SR 0094 bounded by Eisenhower Drive, High Street, and Radio Road. This is a Land Use Activity Category B and E area.

NSA 17 - (Quadrant represented by Receivers S-139) consists of a motel, recording studio, and businesses on the west side of SR 0094 bounded by High Street, Eisenhower Drive, and Wetzel Drive. This is a Land Use Activity Category C, D, and E area.

NSA 18 - (Quadrant represented by Receivers S-157 through S-159) consists of single and multi-family residences and businesses on the west side of SR 0094 bounded by 3rd Street and the project limits. This is a Land Use Activity Category B and E area.

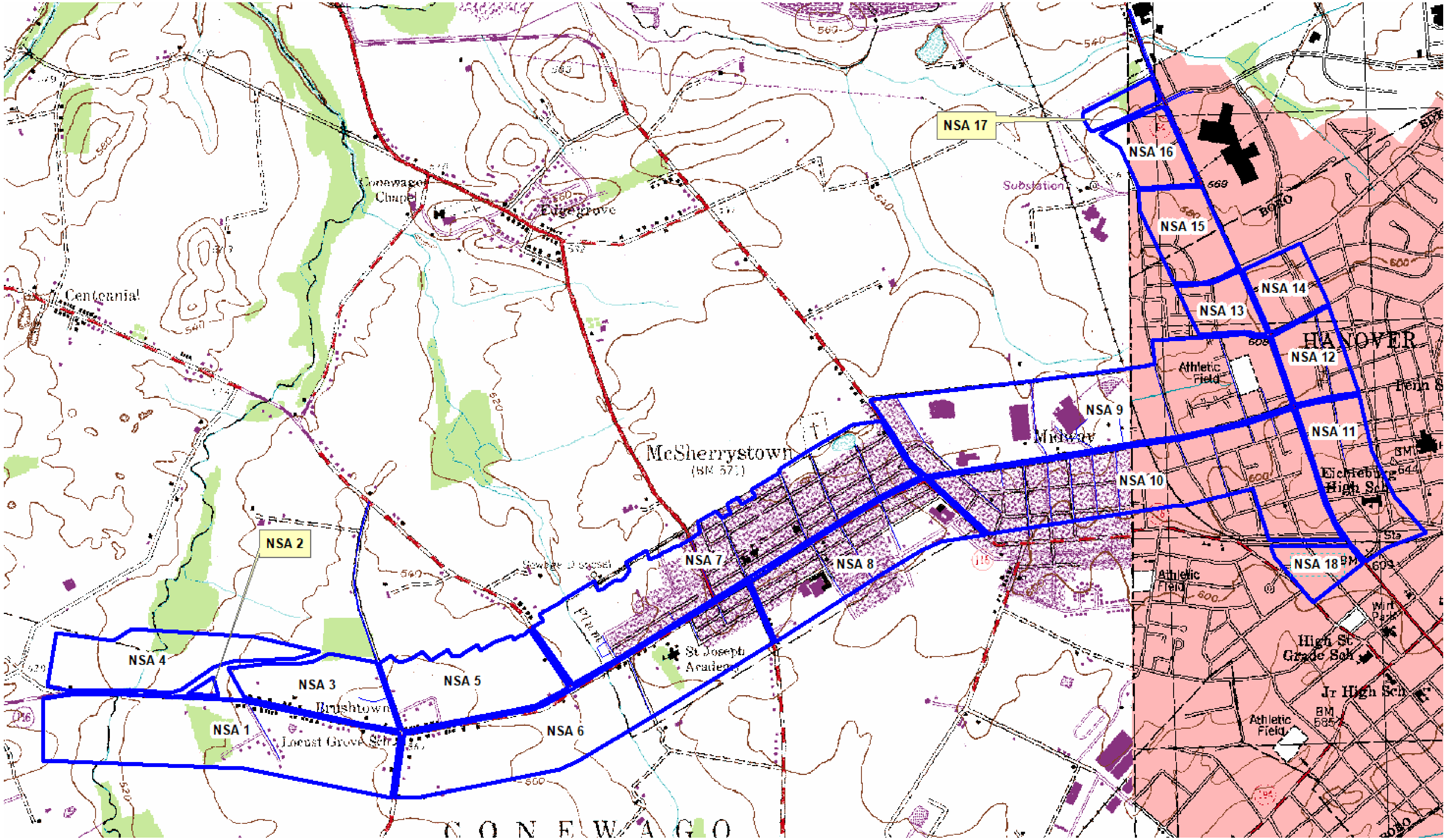


Figure 2: TSM Alternative Noise Study Area (NSA) Locations
Eisenhower Drive Extension Project
Hanover Borough, McSherrystown Borough, and Conewago Township
Adams and York Counties, Pennsylvania

4.2 Determining Screening Level Existing Conditions

Highway traffic noise analysis is modeled using the worst-case existing noise hour within the project area. A peak noise hour was not designated by the information provided, so peak hour volumes were used to be conservative in the screening modeling process.

JMT used manual turning movement counts (TMC) that were collected within the study area in October 2015. TMCs were performed at each study area intersection during the morning and evening peak hour time periods. Additionally, automatic traffic recorder (ATR) counts collected daily traffic volumes at key locations within the network and recorded data for a continuous 72-hours. This existing traffic count data was reviewed, adjusted, and balanced for each corridor to determine the existing worst-case morning and evening peak hour traffic volumes at each study area intersection.

The Year 2015 (Existing Worst-Case) vehicle fleet breakout percentages (cars, motorcycles, medium trucks and heavy trucks) were determined from the ATR counts conducted in 2015. The posted speed limits were utilized to be conservative in the screening modeling process. The roadway service volumes were developed based upon the methodologies presented in the Highway Capacity Manual (HCM), 6th Edition. The Year 2015 (Existing Worst-Case) traffic volumes from JMT are included in **Appendix I**.

The existing worst-case noise levels serve as a basis for the PennDOT "substantial increase" noise abatement criteria and are presented in **Table 3** where the existing 2015 values are compared with future 2042 Build Condition predicted noise levels. These noise levels are also used as a base value to compare approaching noise levels to the NAC Impact level for each Land Use Category.

Table 3 Predicted Noise Levels

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build [dB(A)]
NSA 1						
S-1	5409 Hanover Rd	B	67	**67**	**67**	0
S-2	5472 Hanover Rd	B	67	65	65	0
S-3	5501 Hanover Rd	B	67	**70**	**70**	0
S-4	5525 Hanover Rd	B	67	65	65	0
S-5	5551 Hanover Rd	B	67	**69**	**70**	1
S-6	5593 Hanover Rd	B	67	**70**	**71**	1
S-7	Brushtown Athletic Baseball Fields	C	67	64	64	0
S-8	5617 Hanover Rd	B	67	64	65	1
S-9	5637 Hanover Rd	B	67	**71**	**71**	0
S-10	Brushtown Athletic Baseball Fields	C	67	64	64	0
S-11	5663 Hanover Rd	B	67	**70**	**71**	1
NSA 2						
S-12	5430 Hanover Rd	B	67	**69**	70	1
NSA 3						
S-13	5530 Hanover Rd	B	67	64	64	0
S-14	5500 Hanover Rd	B	67	**67**	**68**	1
S-15	5560 Hanover Rd	B	67	64	64	0
S-16	56 St. Michaels Way	B	67	65	65	0
S-17	36 St. Michaels Way	B	67	**67**	**67**	0
S-18	6 St. Michaels Way	B	67	64	64	0
S-19	St. Michaels Way	B	67	64	64	0
S-20	5694 Hanover Rd	B	67	65	**66**	1
NSA 5						
S-21	5742Hanover Rd	B	67	**70**	**71**	1
S-22	5766 Hanover Rd	B	67	65	**66**	1
S-23	150 Seneca Dr	B	67	64	64	0
S-24	5806 Hanover Rd	B	67	**70**	**71**	1
S-25	5834 Hanover Rd	B	67	**70**	**71**	1
S-26	5840 Hanover Rd	B	67	65	65	0
S-27	74 Shoshone Dr	B	67	64	64	0
S-28	68 Shoshone Dr	B	67	**68**	**68**	0
S-29	48 Shoshone Dr	B	67	65	65	0
S-30	28 Shoshone Dr	B	67	64	64	0
S-31	32 Shoshone Dr	B	67	**67**	**68**	1

Table 3 Predicted Noise Levels

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build [dB(A)]
NSA 5						
S-32	5940 Hanover Rd	B	67	**70**	70	0
S-33	5964 Hanover Rd	B	67	65	65	0
NSA 6						
S-34	5743 Hanover Rd	B	67	**70**	**71**	1
S-35	5749 Hanover Rd	B	67	65	65	0
S-36	5765 Hanover Rd	B	67	**70**	**71**	1
S-37	5775 Hanover Rd	B	67	65	65	0
S-38	5807 Hanover Rd	B	67	**70**	**71**	1
S-39	5831 Hanover Rd	B	67	65	65	0
S-40	5955 Hanover Rd	B	67	**73**	**73**	0
S-41	7 St Joseph Ln	B	67	64	64	0
S-42	15 St Joseph Ln	B	67	64	64	0
S-43	Saint Joseph Academy	C	67	64	64	0
S-44	Saint Joseph Academy	C	67	64	64	0
S-45	124 Main St	B	67	64	65	1
S-46	141 South St	B	67	64	64	0
S-47	208 Main St	B	67	**67**	**71**	4
S-48	209 South St	B	67	64	64	0
S-49	230 Main St	B	67	**67**	**70**	3
NSA 7						
S-50	Public Park	C	67	64	64	1
S-51	27 Main St	B	65	65	65	0
S-52	32 North St	B	64	64	64	0
S-53	53 Main St	B	67	**67**	**67**	0
S-54	71 Main St	B	64	64	64	0
S-55	81 Main St	B	67	**67**	**68**	1
S-56	87 Main St	B	64	64	64	0
S-57	106 North St	B	64	64	64	0
S-58	125 Main St	B	64	64	65	1
S-59	136 Main St	B	64	64	64	0
S-60	225 Main St	B	64	64	65	1
S-61	311 Maple St	B	64	64	65	1
S-62	St Teresa of Calcutta Catholic School	C	67	64	64	0
S-63	353 Main St	B	64	64	64	0

Table 3 Predicted Noise Levels

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build [dB(A)]
NSA 7						
S-64	18 N 4th St	B	67	64	64	0
S-65	429 Main St	B	67	64	65	1
S-66	521 Main St	B	67	65	65	0
S-67	524 North St	B	67	64	64	0
S-68	619 Maple St	B	67	64	64	0
S-69	629 Main St	B	67	**68**	**67**	-1
S-140	Subway Restaurant	C	67	**66**	**66**	0
NSA 8						
S-70	305 South St	B	67	64	64	0
S-71	322 Main St	B	67	**67**	**67**	0
S-72	337 South St	B	67	64	64	0
S-73	360 Main St	B	67	**67**	**67**	0
S-74	409 South St	B	67	64	64	0
S-75	424 Main St	B	67	**67**	**68**	1
S-76	507 South St	B	67	64	64	0
S-77	524 Main St	B	67	**68**	**71**	3
S-78	531 South St	B	67	64	64	0
S-79	612 Main St	B	67	**68**	**68**	0
S-80	615 South St	B	67	64	64	0
S-81	628 Main St	B	67	65	65	0
S-82	623 South St	B	67	64	64	0
NSA 9						
S-83	4 N Oxford Ave	B	67	**67**	**68**	1
S-84	832 Linden Ave	B	67	65	65	0
S-85	Conewago Township Elementary	C	67	64	64	0
S-86	Conewago Township Elementary	C	67	64	64	0
S-87	911 W Elm Ave	B	67	**69**	**69**	0
S-88	425 W Elm Ave	B	67	65	65	0
S-89	411 W Elm Ave	B	67	**69**	**70**	1
S-90	333 W Elm Ave	B	67	65	65	0
S-91	205 W Elm Ave	B	67	64	65	1
S-92	201 W Elm Ave	B	67	**67**	**68**	1
S-93	115 W Elm Ave	B	67	64	65	1
S-94	101 W Elm Ave	B	67	64	64	0

Table 3 Predicted Noise Levels

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build [dB(A)]
NSA 9						
S-95	15 W Elm Ave	B	67	**68**	69	1
S-96	702 Carlisle St	B	67	64	64	0
S-97	Clearview Elementary School	C	67	64	64	0
NSA 10						
S-98	725 3rd St	B	67	65	65	0
S-99	1206 W Elm Ave	B	67	**70**	**70**	0
S-100	722 Linden Ave	B	67	**68**	**67**	-1
S-101	617 Maple St	B	67	64	64	0
S-102	1100 W Elm Ave	B	67	64	64	0
S-103	Dentist office	C	67	**67**	68	1
S-104	511 Maple Ave	B	67	64	64	0
S-105	1008 W Elm Ave	B	67	**68**	**67**	-1
S-106	1000 W Elm Ave	B	67	64	64	0
S-107	411 Maple Ave	B	67	64	64	0
S-108	Day Care Center	C	67	**68**	68	0
S-109	387 Maple Ave	B	67	64	64	0
S-110	712 W Elm Ave	B	67	**68**	**68**	0
S-111	373 Maple Ave	B	67	64	64	0
S-112	518 High St	B	67	**67**	**67**	0
S-113	508 High St	B	67	64	64	0
S-114	410 W Elm Ave	B	67	**69**	**69**	0
S-115	400 W Elm Ave	B	67	65	65	0
S-116	215 Maple Ave	B	67	64	64	0
S-117	206 W Elm Ave	B	67	**68**	**68**	0
S-118	201 Maple Ave	B	67	64	64	0
S-119	118 W Elm Ave	B	67	64	65	1
S-120	112 W Elm Ave	B	67	**67**	**68**	1
S-121	37 Maple Ave	B	67	64	64	0
S-141	14 Maple Ave	B	67	64	65	1
S-142	502 Carlisle St	B	67	64	65	1
S-143	454 Carlisle St	B	67	**66**	**68**	2
S-144	434 Carlisle St	B	67	**68**	**70**	2
S-145	13 Third St	B	67	64	64	0
S-146	11 Third St	B	67	64	65	1

Table 3 Predicted Noise Levels

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build [dB(A)]
NSA 11						
S-122	51 E Elm Ave	B	67	**68**	**68**	0
S-123	63 Meredith Ct	B	67	64	64	0
S-124	620 Eichelberger Street	B	67	64	64	0
S-147	9 Allegheny Ave	B	67	64	64	0
S-148	561 Carlisle St	B	67	**69**	**71**	2
S-149	521 Carlisle St	B	67	65	**66**	1
S-150	505 Carlisle St	B	67	**69**	**71**	2
S-151	451 Carlisle St	B	67	**70**	**70**	0
S-152	439 Carlisle St	B	67	65	65	0
S-153	435 Carlisle St	B	67	**70**	**72**	2
S-154	423 Carlisle St	B	67	64	65	1
S-155	407 Carlisle St	B	67	**69**	**72**	3
S-156	Guthrie Memorial Library	C	67	**67**	**68**	1
NSA 12						
S-125	54 E Elm Ave	B	67	64	64	0
S-126	756 Eichelberger Street	B	67	64	64	0
S-127	764 Eichelberger Street	B	67	64	64	0
S-128	772 Eichelberger Street	B	67	64	64	0
NSA 13						
S-129	100 Kuhn Dr	B	67	64	64	0
S-130	10 Kuhn Dr	B	67	64	64	0
NSA 14						
S-131	Clearview Motor Inn	E	72	**66**	67	1
S-132	912 Sherwood St	B	67	64	64	0
S-133	932 Sherwood St	B	67	64	64	0
NSA 15						
S-134	97 Kuhn Dr	B	67	64	64	0
S-135	1028 Keith Dr	B	67	64	64	0
S-136	1025 Keith Dr	B	67	64	64	0
S-137	30 Radio Rd	B	67	64	64	0
NSA 16						
S-138	97 Kuhn Dr	B	67	64	64	0
NSA 17						
S-139	Super 8 Motel	E	72	64	64	0

Table 3 Predicted Noise Levels

Receiver Number	Residence Address or Property Description	Land Use Category	NAC Impact Level	2015 Existing Worst-Case Traffic Noise Level [dB(A)]	2042 Build[1] Predicted Noise Level [dB(A)]	Difference from Existing to 2042 Build [dB(A)]
			NSA 18			
S-157	339 N Franklin St	B	67	64	64	0
S-158	6 Third St	B	67	64	64	0
S-159	304 Carlisle St	C	67	64	64	0

1. *Receivers that warrant the investigation of noise abatement occurs where the predicted noise levels meet any of the following criteria:*
   - *2042 Build Predicted Highway Traffic Noise levels equal or exceeds 66 dB(A) for Land Use Category B (Residential) & C*
   - *2042 Build Predicted Highway Traffic Noise levels equal or exceeds 71 dB(A) for Land Use Category E (Commercial & Hotel)*
   - *2042 Build Predicted Highway Traffic Noise substantially exceed (by 10 dB(A) or more) the existing Highway Traffic Noise*

5.0 FUTURE HIGHWAY TRAFFIC NOISE ANALYSIS

5.1 Introduction

Future worst-case noise levels are predicted using TNM Version 2.5 for the 2042 Build Conditions. A screening level TNM model of existing conditions is used as a base to create the TNM runs for predicting future conditions.

5.2 Predicted Noise Levels

5.2a Predicted Traffic

Predicted traffic volume data utilized for the project was derived from information provided by JMT. To develop worst case 2042 future traffic volumes, a growth rate was determined utilizing the York County Planning Commission (YCPC) 2010 Base and 2040 No Build travel demand models. The growth rate and growth factor for the study area are:

- Growth Rate: 0.76% (annually)
- Growth Factor: 1.21% (2015-2042)

This growth rate was applied to the existing traffic volumes collected as part of this project to determine the worst-case Design Year 2042 TSM traffic volumes. The Year 2015 (Existing Worst-Case) as well as Year 2042 Build traffic volume figures from the report are included in **Appendix I**.

5.2b Predicted Noise Level Results

The TSM Alternative alignment, proposed lanes, and signal improvements were incorporated into the 2042 Build Condition model. The model was run to determine future predicted noise levels for assessment of any impacted receivers. **Table 3** compares the modeled 2042 Build Condition noise levels to the Existing Worst Case. Highlighted cells (white background) in the Predicted Noise Levels table indicates that receivers are impacted, and that noise mitigation investigation is warranted for the 2042 Build Condition. This could be because 2042 predicted noise levels are at or above the appropriate NAC depending on corresponding Land Use Category or with a substantial noise level increase (10 dB(A)) from existing.

All noise levels are rounded to the nearest whole decibel. 2042 Build Noise Levels were found to increase (max. 4 dB(A)) in areas depending on the proposed roadway configuration and increased traffic.

The TNM results from the predicted noise level analysis are included in **Appendix II** and **Maps VII-XII**.

6.0 HIGHWAY TRAFFIC NOISE CONSIDERATION AND ABATEMENT ALTERNATIVES

6.1 Impact Analysis and Noise Abatement Warrants

PennDOT defines traffic noise impacts if the design year noise levels equal or substantially exceed the defined Noise Abatement Criteria (NAC) for the appropriate Land Use Activity Category. For a Type I analysis, a noise study area warrants consideration of noise abatement if one of the following criteria is met:

- Predicted Design Year Highway Traffic Noise levels equal or exceed the NAC criteria in **Table 2**, or
- Predicted Design Year Highway Traffic Noise levels are predicted to substantially increase by 10 dB(A) or more over existing levels.

No receivers were found to have predicted noise levels that substantially increase over existing levels. A total of fifty-seven receivers along the project corridor have worst-case design year traffic noise levels that equal or exceed the NAC for the 2042 Build Condition. Many receivers are also impacted for the 2015 Existing Worst-Case Condition.

The results are detailed and distributed as follows:

NSA 1-3 & 5-11
Predicted levels range from 64 dB(A) to 73 dB(A), with a maximum increase of 4 dB(A) from the existing worst-case condition. Mitigation alternatives will not be evaluated for these areas because it is not feasible to build a noise wall due to the close spacing of commercial and residential entrances and driveways. Required noise wall length is estimated at four times the sight distance from the receiver to the roadway, and for these receivers the minimum noise wall length would necessitate frontage which is not available in these areas. Therefore, a noise barrier for NSAs 1-3 and 5-11 **are warranted but not feasible**.

NSA 12 - 18
Predicted levels range from 64 dB(A) to 67 dB(A), with a maximum increase of 1 dB(A) from the existing worst-case condition. Mitigation alternatives for these NSAs will not be evaluated for reasonableness because the receivers' sound levels do not equal or exceed the NAC for the 2042 build condition. Therefore, noise barriers for NSAs 12-18 **are not warranted**.

6.2 Abatement Considerations

This project is a Type I Screening analysis; therefore, the impacts have been noted and abatement has been shown to not be feasible or reasonable. Further considerations are not required.

7.0 PUBLIC INVOLVEMENT

A Public Plans Display Open House was conducted on June 21, 2018, from 6:00 to 8:00 pm and a second Open House was held on May 9, 2019 from 2pm to 7pm, at the Southeast Adams Volunteer Emergency Services facility located at 5865 Hanover Road, Hanover, PA 17331. The purpose of these meetings was to: introduce the project to the public, provide information on the status of the project, display the preliminary proposed alignments, provide the opportunity to view the display boards presenting various elements of the project, provide the public an opportunity to provide feedback on the project, and meet with the project design team.

In addition to the Public Plans Display Open House held on June 21, 2018 and May 9, 2019, the following public involvement activities are anticipated:

- Redevelopment of the project website: http://eisenhowerdriveextension.com/
- The Draft EA will be made available to the public for review, and
- Around the same time as the public review period, there will be an opportunity for a Public Hearing.

8.0 CONSTRUCTION NOISE

For PennDOT projects, potential construction-related noise impacts from transportation improvement projects should be evaluated on a project-by-project basis, considering land uses/activities identified, construction measures being used, and public concern. The level of analysis can range from qualitative to quantitative analyses, depending on the anticipated level of impact.

During construction of any proposed improvements, the residences, businesses, and hotels closest to the construction area will likely be impacted by construction noise because of the project. To minimize the impact to the residential community, all proposed construction will comply with applicable Federal, State and Local noise control regulations, as well as the Occupational Safety and Health Act of 1970. Where practicable, construction activity should be confined to time periods that will create a minimum amount of disturbance to the community. The Contractor should use only equipment adapted to operate with the least possible noise and should conduct his work so that annoyance to occupants of nearby property and the general public will be reduced to a minimum.

9.0 REFERENCES

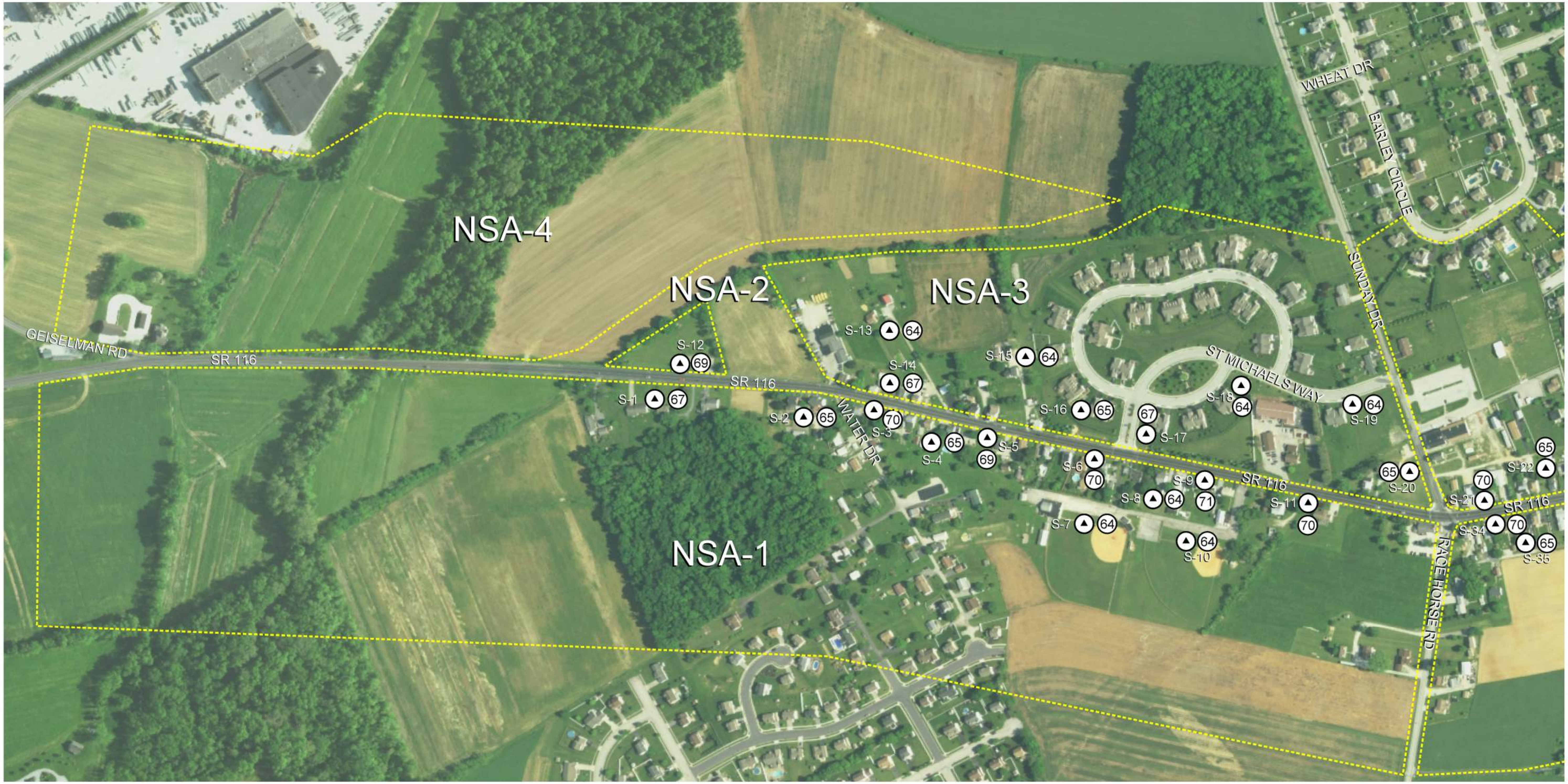
A. Title 23, United States Code of Federal Regulations, Part 772, (23 CFR) entitled Procedures for Abatement of Highway Traffic Noise and Construction Noise. National Archives and Records Administration – April 1, 1995

B. Pennsylvania Department of Transportation Project Level Highway Traffic Noise Handbook. Revised Publication No. 24 – November 2015.

10.0 MAPS

a. Maps I through VI – 2015 Existing Conditions Maps

b. Maps VII through XII – 2042 Build Conditions Maps



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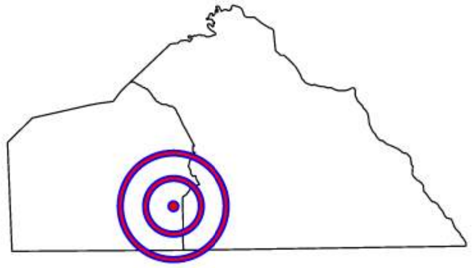

Vicinity Map

0 200 400
Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2015 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
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Eisenhower Drive Extension

Noise Screening Report

2015 EXISTING MAP

Map No. I

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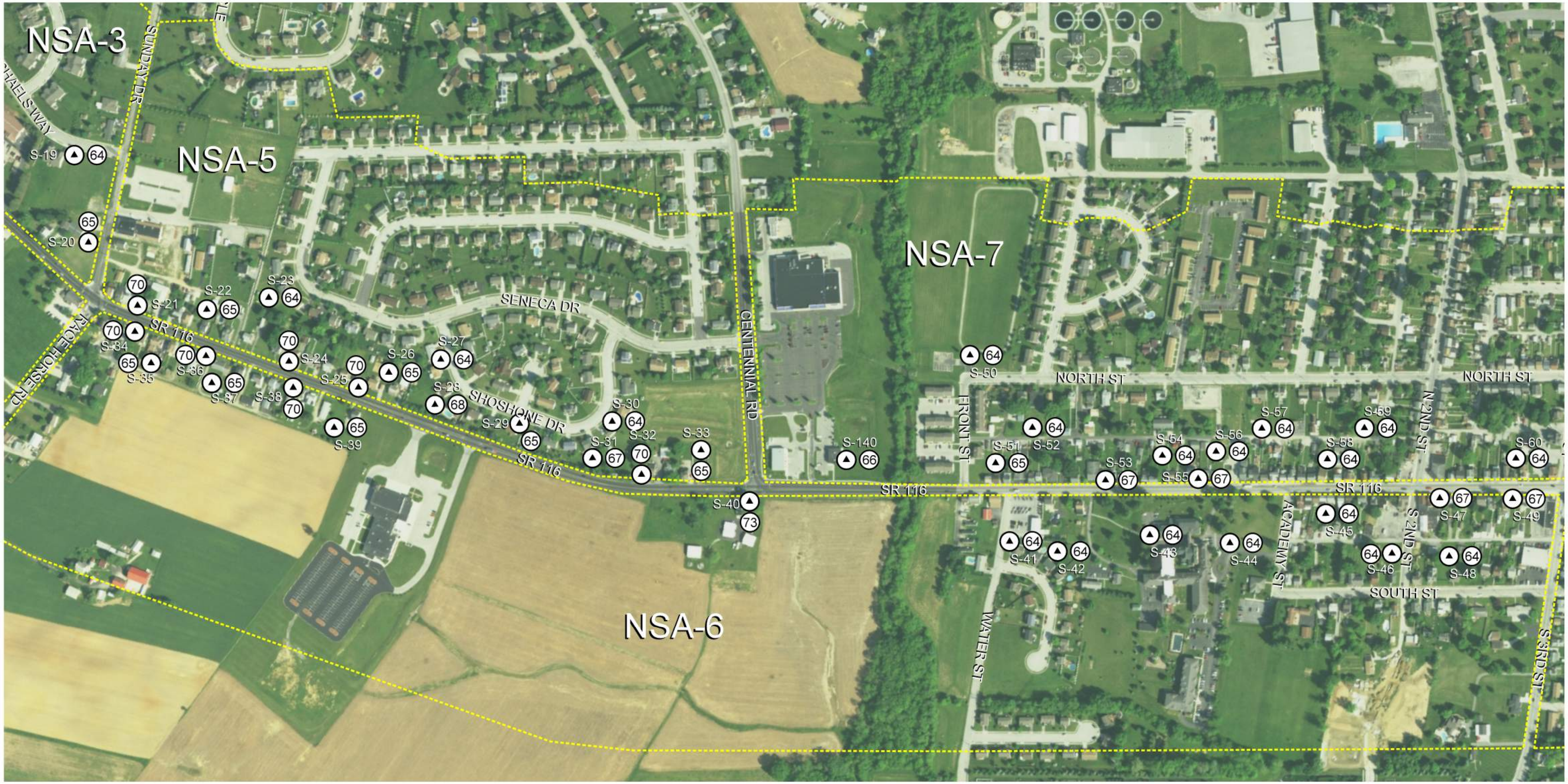

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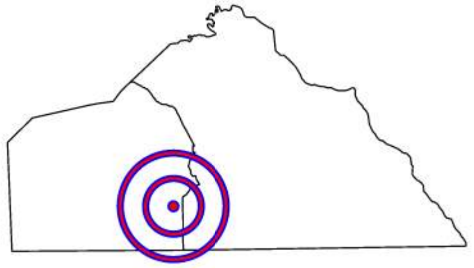

Vicinity Map

Legend

S-1 ▲ Modeled Receptor

63 2015 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2015 EXISTING MAP

Map No. II

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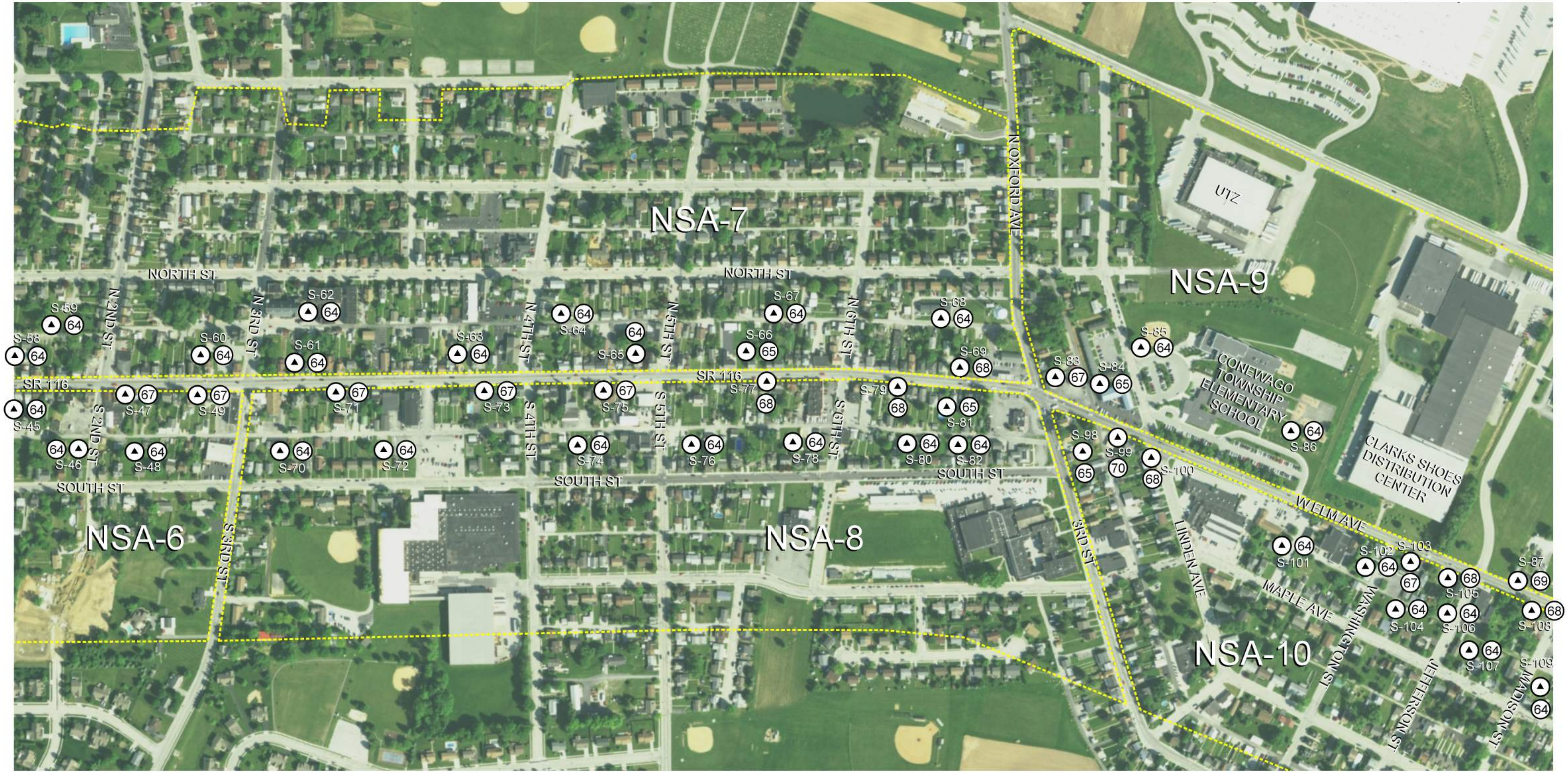

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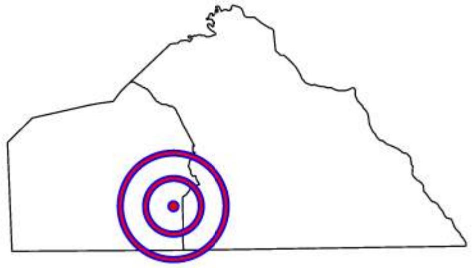

Vicinity Map

Legend

S-1 ▲ Modeled Receptor

(63) 2015 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

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Eisenhower Drive Extension

Noise Screening Report

2015 EXISTING MAP

Map No. III

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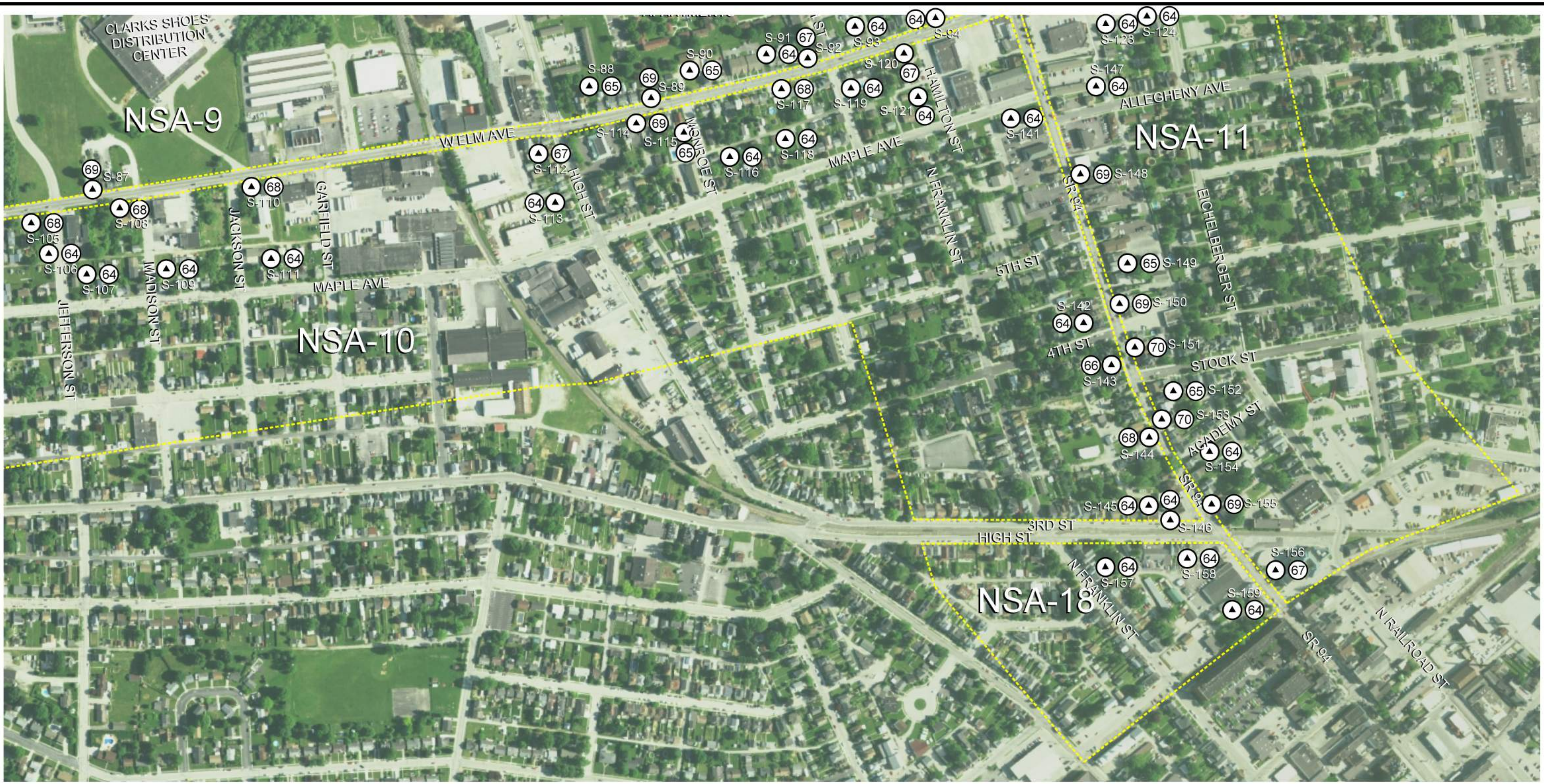

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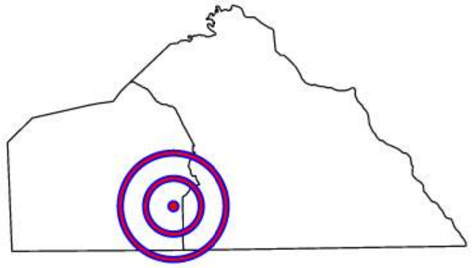

Vicinity Map

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Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2015 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

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Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2015 EXISTING MAP

Map No. IV

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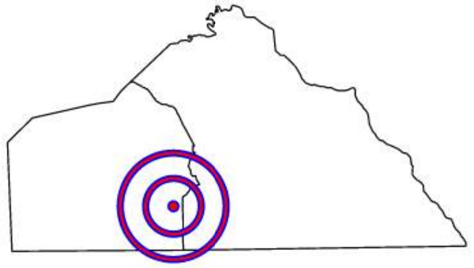

Vicinity Map

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Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2015 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2015 EXISTING MAP

Map No. V

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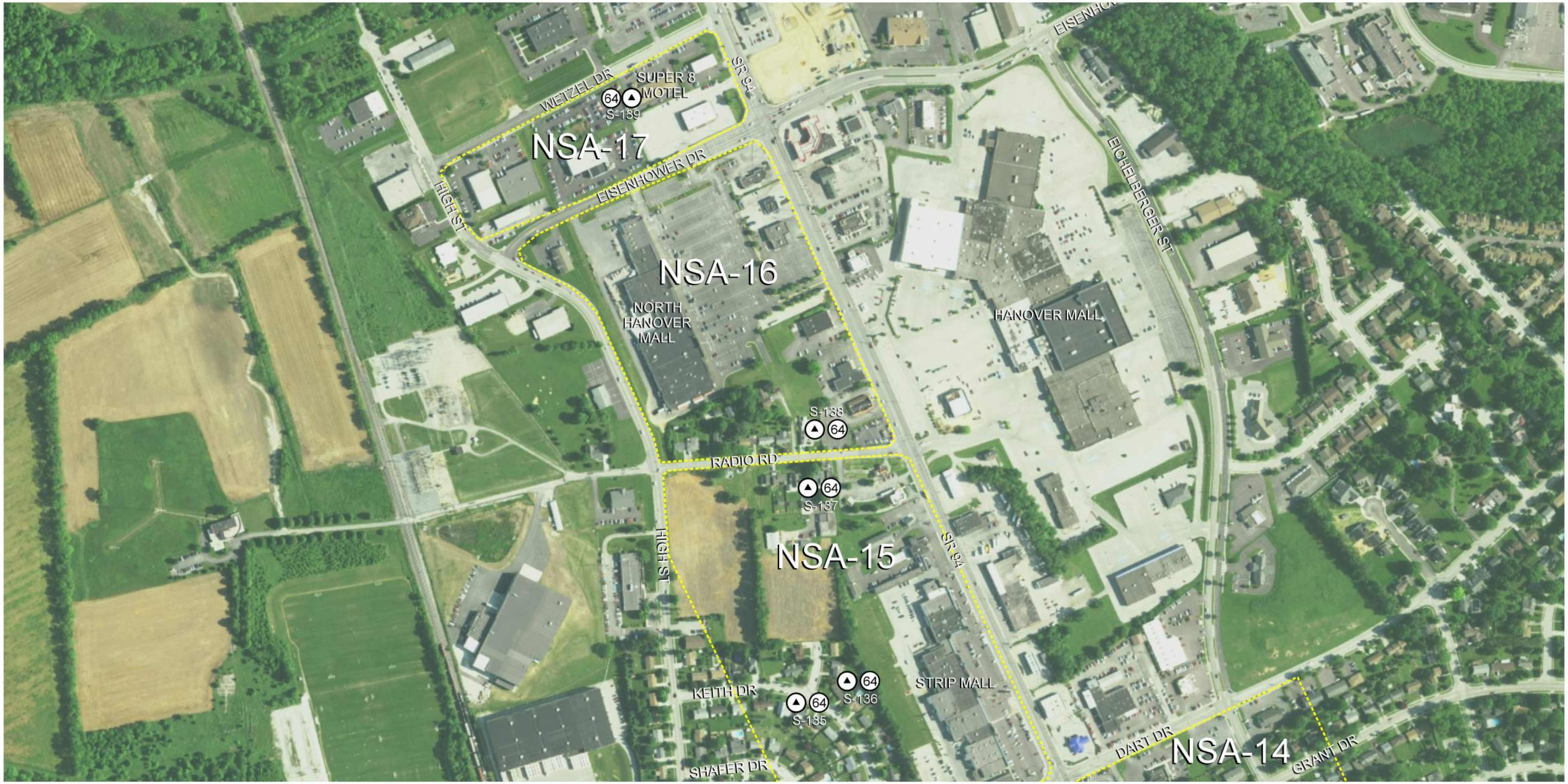

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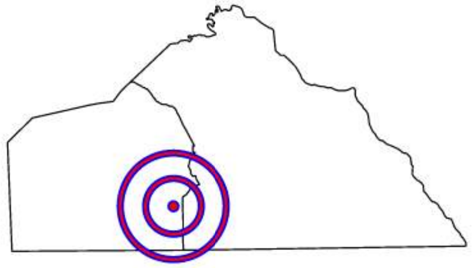

Vicinity Map

Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2015 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

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Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2015 EXISTING MAP

Map No. VI

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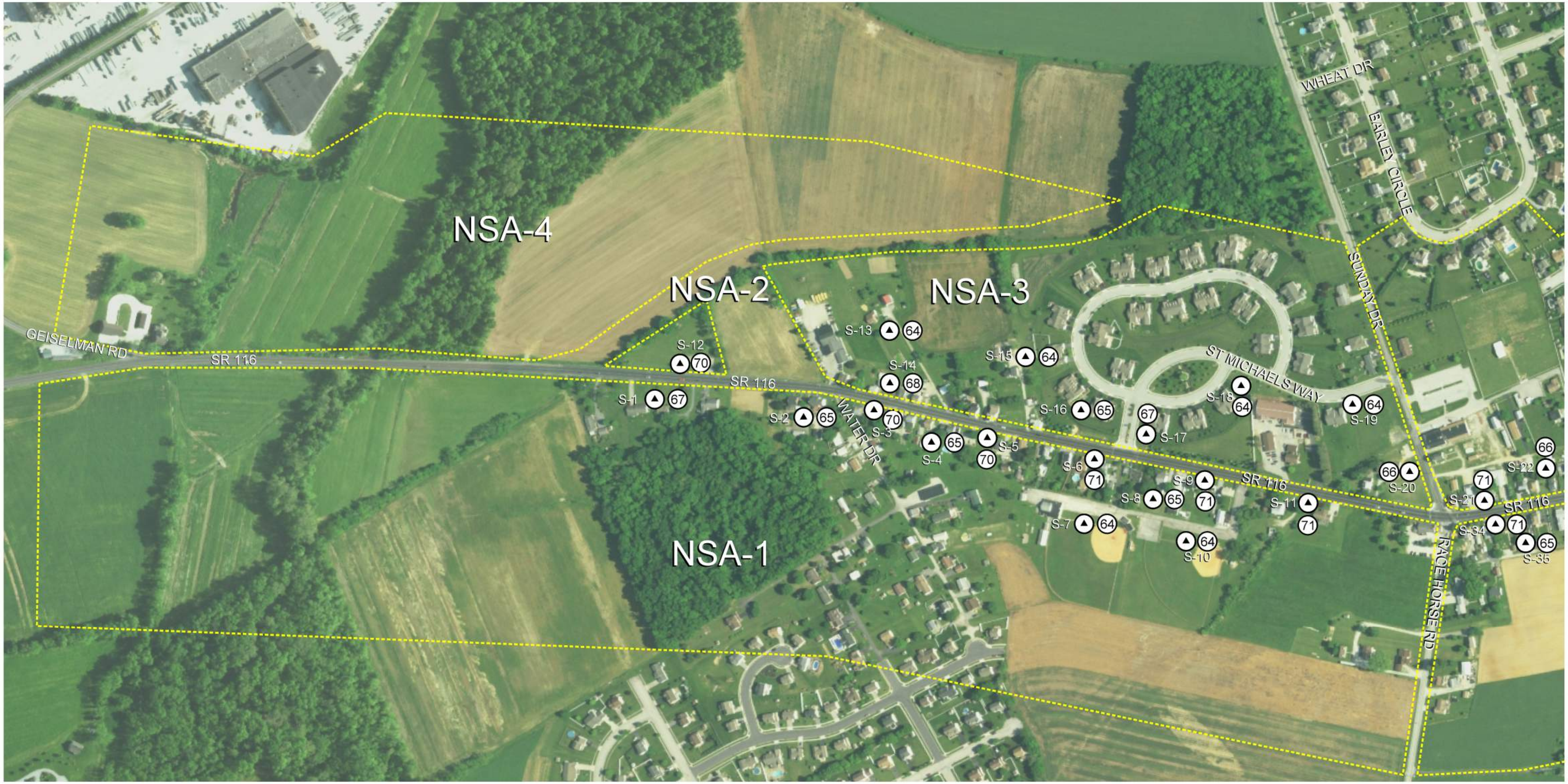

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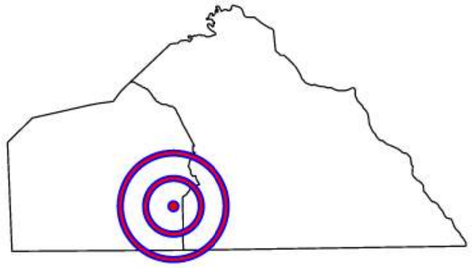

Vicinity Map

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Scale in Feet

Legend

S-1 ▲	Modeled Receptor	63	2042 Noise Level, Leq, dB(A)
NSA-1	Noise Study Area		

May 2019

PennDOT
District 8-0

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Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2042 BUILD MAP

Map No. VII

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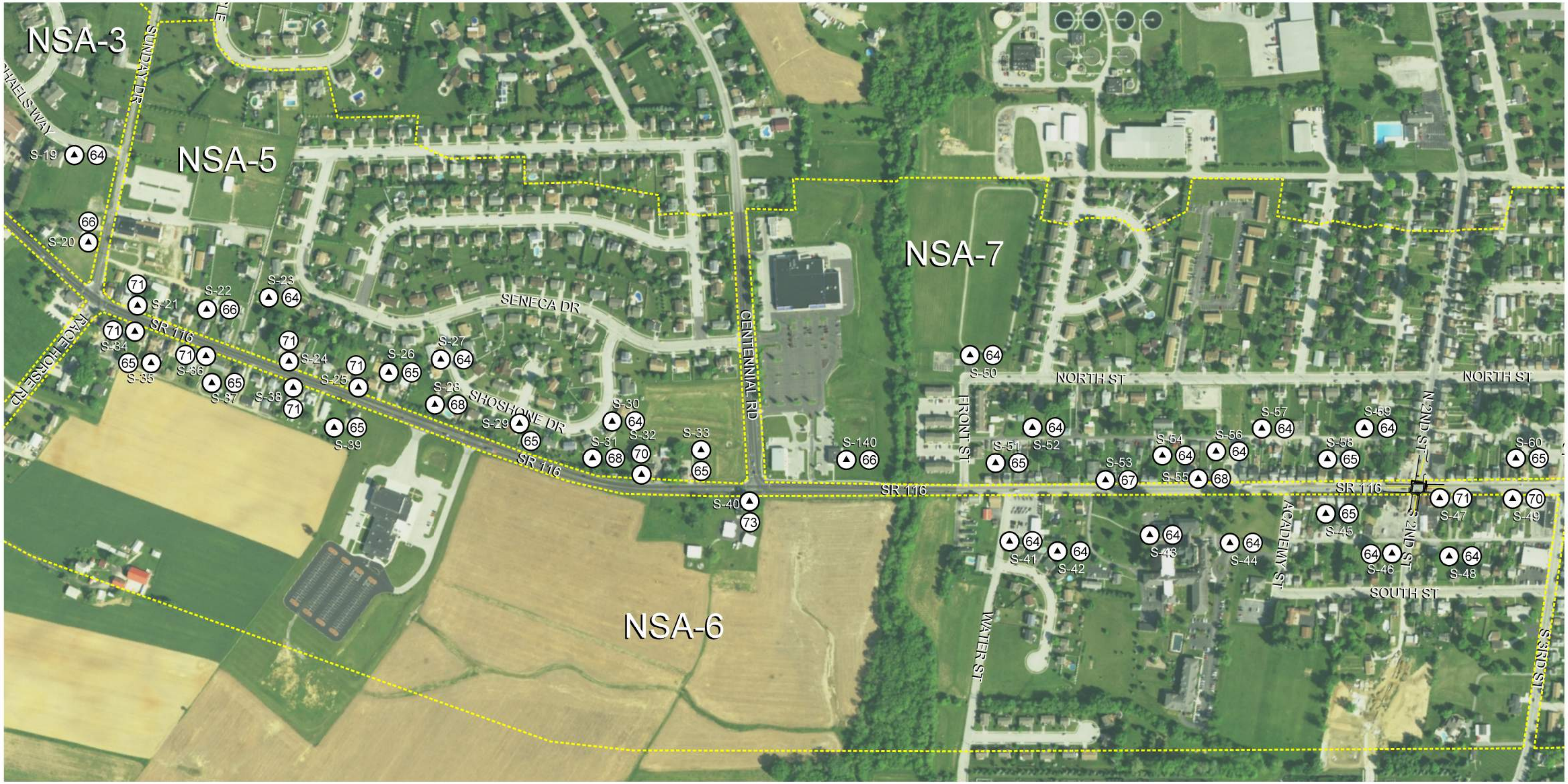

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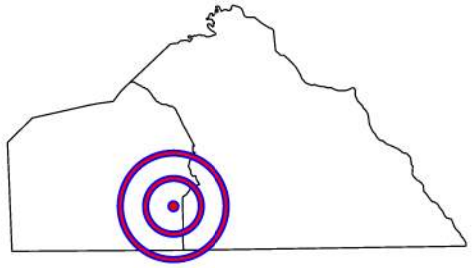

Vicinity Map

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Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2042 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2042 BUILD MAP

Map No. VIII

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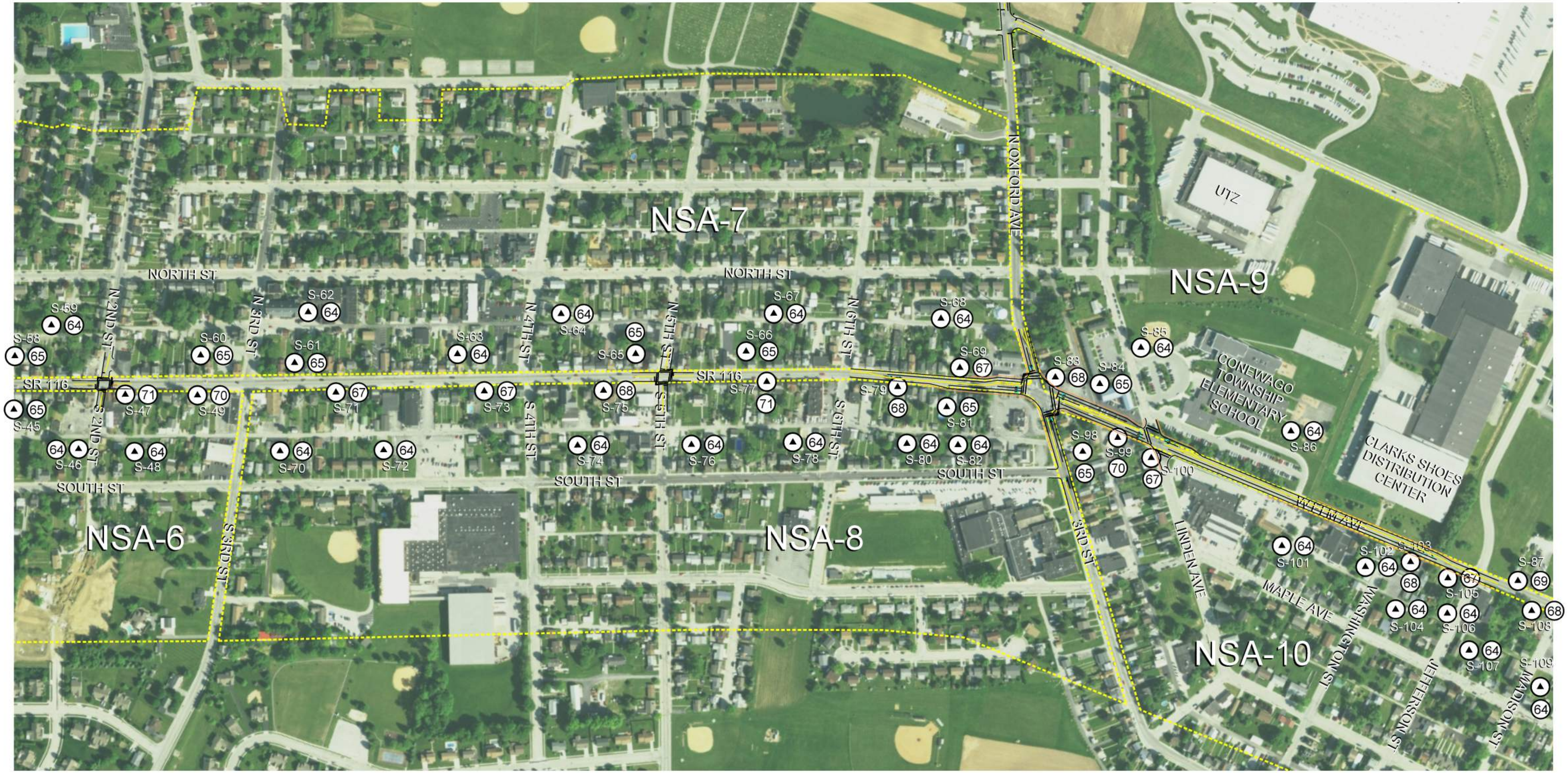

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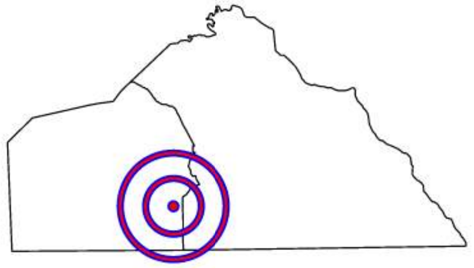

Vicinity Map

0 200 400
Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2042 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
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Eisenhower Drive Extension

Noise Screening Report

2042 BUILD MAP

Map No. IX

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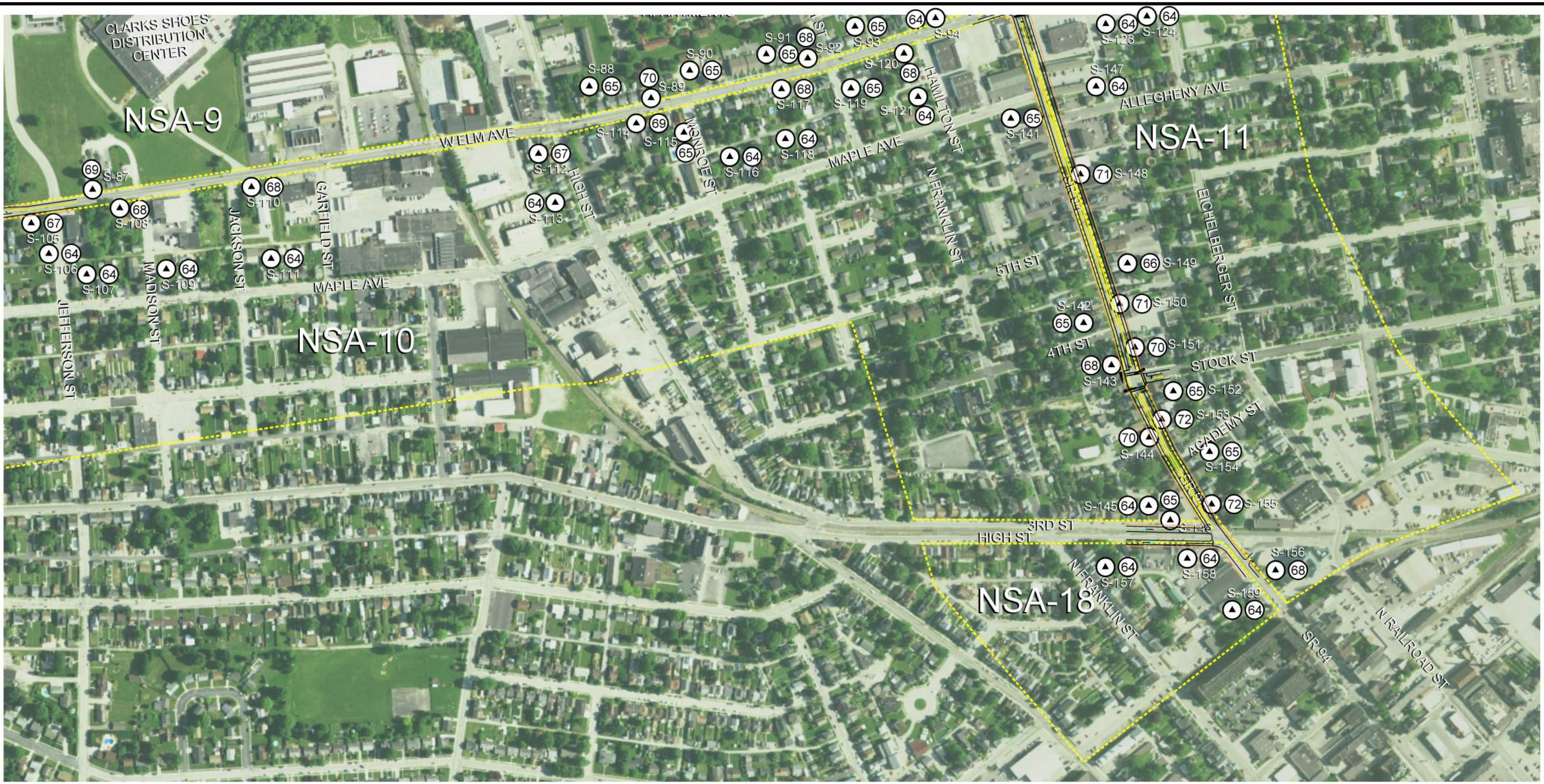

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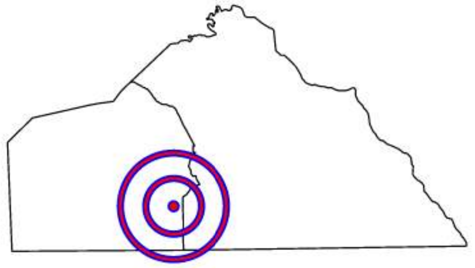

Vicinity Map

0 200 400
Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2042 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
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Eisenhower Drive Extension

Noise Screening Report

2042 BUILD MAP

Map No. X

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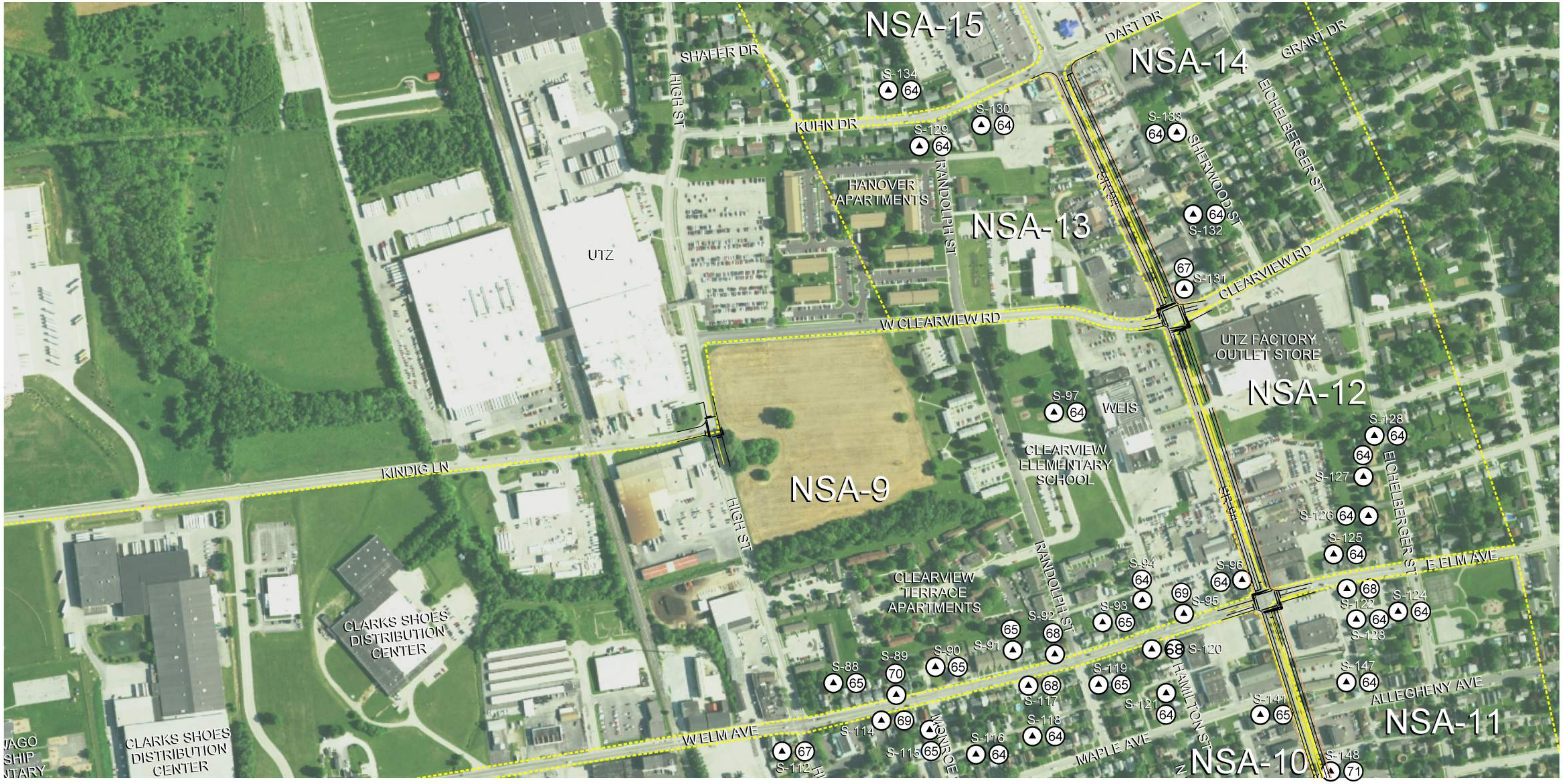

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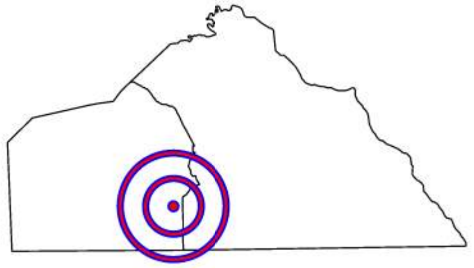

Vicinity Map

0 200 400
Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2042 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

PennDOT
District 8-0

The Pennsylvania
Department of Transportation
Eisenhower Drive Extension

Noise Screening Report

2042 BUILD MAP

Map No. XI

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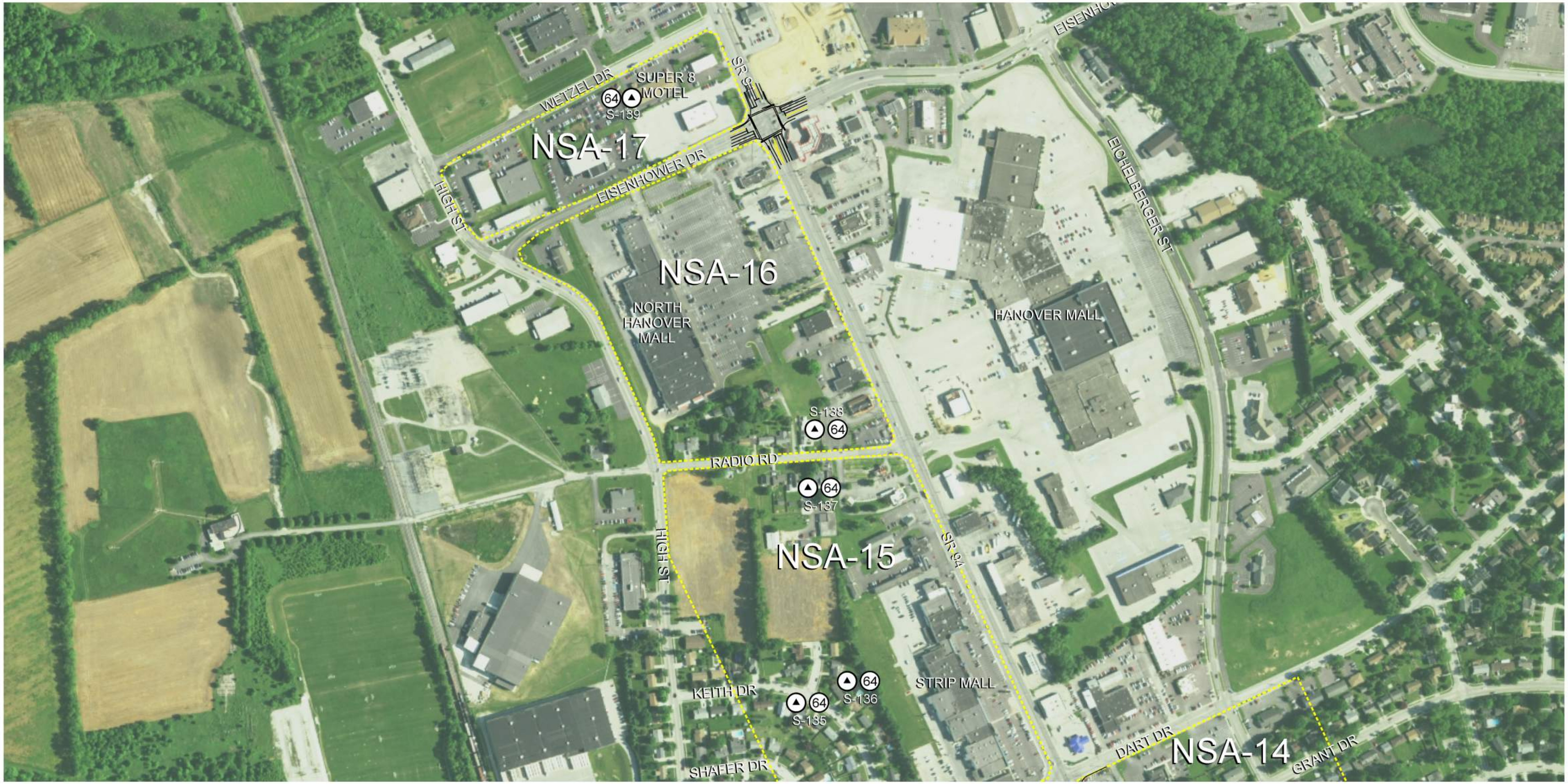

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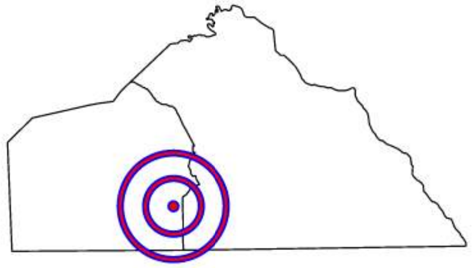

Vicinity Map

0 200 400
Scale in Feet

Legend

S-1 ▲ Modeled Receptor

(63) 2042 Noise Level, Leq, dB(A)

NSA-1 Noise Study Area

May 2019

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Eisenhower Drive Extension

Noise Screening Report

2042 BUILD MAP

Map No. XII

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Appendix I

NOISE ANALYSIS TRAFFIC DATA

INTRODUCTION

Highway traffic noise analysis is modeled using the worst-case existing noise hour within the project area. A peak noise hour was not designated by the information provided, so peak hour volumes were used to be conservative in the screening modeling process.

JMT used manual turning movement counts (TMC) that were collected within the study area in October 2015. TMCs were performed at each study area intersection during the morning and evening peak hour time periods. Additionally, automatic traffic recorder (ATR) counts collected daily traffic volumes at key locations within the network and recorded data for a continuous 72-hours. This existing traffic count data was reviewed, adjusted, and balanced for each corridor to determine the existing worst-case morning and evening peak hour traffic volumes at each study area intersection.

The Year 2015 (Existing Worst-Case) vehicle fleet breakout percentages (cars, motorcycles, medium trucks and heavy trucks) were determined from the ATR counts conducted in 2015. The posted speed limits were utilized to be conservative in the screening modeling process. The roadway service volumes were developed based upon the methodologies presented in the Highway Capacity Manual (HCM), 6th Edition.

Predicted traffic volume data utilized for the project was derived from information provided by JMT. To develop worst case 2042 future traffic volumes, a growth rate was determined utilizing the York County Planning Commission (YCPC) 2010 Base and 2040 No Build travel demand models. The growth rate and growth factor for the study area are:

- Growth Rate: 0.76% (annually)
- Growth Factor: 1.21% (2015-2042)

This growth rate was applied to the existing traffic volumes collected as part of this project to determine the worst-case Design Year 2042 Transportation Systems Management (TSM) traffic volumes.

The Predicted Traffic summary spreadsheets for each analysis scenario provided by JMT are included in the following pages.

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Morning Peak Hour

		SR 0116 EB						SR 0116 WB						SR 2008 EB				SR 2008 WB				SR 3098		SR 0094 NB			
		Geiselman Rd (T478) to Sunday Dr (T460)/Race Horse Rd (SR 2021)	Sunday Dr (T460)/Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Sunday Dr (T460)/Race Horse Rd (SR 2021)	Sunday Dr (T460)/Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/Elm Ave (SR 2008) to Maple Ave (Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	353	460	620	625	555	405	410	405	475	485	433	285	99	270	323	465	75	210	218	290	290	225	410	438	438	555
	LOS 'D/E' Analysis Result**	740	790	580	580	580	580	740	790	580	580	580	580	790	790	580	580	790	790	580	580	580	580	580	580	1220	1220
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Design Speed	50	45	30	30	30	30	50	45	30	30	30	30	40	45	40	40	40	45	40	40	40	40	40	40	40	40
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		353	460	580	580	555	405	410	405	475	485	433	285	99	270	323	465	75	210	218	290	290	225	410	438	438	555
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%	2.1%	2.1%	2.1%	2.1%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	325.7	425.0	535.9	535.9	512.8	374.2	378.8	374.2	438.9	448.1	399.6	263.3	90.0	246.8	294.8	425.0	68.6	192.0	198.8	265.1	270.8	210.1	374.8	399.9	399.9	507.3
	Medium Trucks	15.1	19.7	24.8	24.8	23.7	17.3	17.5	17.3	20.3	20.7	18.5	12.2	4.8	13.2	15.8	22.7	3.7	10.3	10.6	14.2	10.6	8.3	20.0	21.4	21.4	27.1
	Heavy Trucks	6.5	8.5	10.7	10.7	10.3	7.5	7.6	7.5	8.8	9.0	8.0	5.3	2.1	5.7	6.8	9.8	1.6	4.4	4.6	6.1	4.6	3.6	8.7	9.2	9.2	11.7
	Buses	3.1	4.0	5.1	5.1	4.9	3.5	3.6	3.5	4.2	4.2	3.8	2.5	1.0	2.7	3.2	4.7	0.8	2.1	2.2	2.9	2.2	1.7	4.1	4.4	4.4	5.6
	Motorcycles	2.1	2.8	3.5	3.5	3.3	2.4	2.5	2.4	2.9	2.9	2.6	1.7	0.6	1.6	1.9	2.8	0.4	1.2	1.3	1.7	1.8	1.4	2.4	2.6	2.6	3.3
based on ave. % for all TMS																											
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	326	425	536	536	513	374	379	374	439	448	400	263	90	247	295	425	69	192	199	265	271	210	375	400	400	507
	Motorcycles	2	3	3	3	3	2	2	2	3	3	3	2	1	2	2	3	0	1	1	2	2	1	2	3	3	3
USE THESE VOLUMES	**TOTAL**	353	460	580	580	555	405	410	405	475	485	433	285	99	270	323	465	75	210	218	290	290	225	410	438	438	555
	Cars	326	425	536	536	513	374	379	374	439	448	400	263	90	247	295	425	69	192	199	265	271	210	375	400	400	507
	Medium Trucks	15	20	25	25	24	17	18	17	20	21	19	12	5	13	16	23	4	10	11	14	11	8	20	21	21	27
	Heavy Trucks	7	8	11	11	10	7	8	7	9	9	8	5	2	6	7	10	2	4	5	6	5	4	9	9	9	12
	Buses	3	4	5	5	5	5	3	5	4	4	3	3	1	2	3	4	0	3	2	3	1	2	4	5	5	6
	Motorcycles	2	3	3	3	3	2	2	2	3	3	3	2	1	2	2	3	0	1	1	2	2	1	2	3	3	3
	Speed	45.0	40.0	10.0	10.0	25.0	25.0	45.0	40.0	25.0	25.0	25.0	25.0	35.0	40.0	35.0	35.0	35.0	40.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Morning Peak Hour

		SR 0094 SB				High St NB				High St SB			
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	375	433	433	635	245	440	495	100	110	185	308	80
	LOS 'D/E' Analysis Result**	580	580	1220	1220	580	580	580	580	580	580	580	580
	# of lanes	1	1	2	2	1	1	1	1	1	1	1	1
	Design Speed	40	40	40	40	30	40	40	40	30	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		375	433	433	635	245	440	495	100	110	185	308	80
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	342.8	395.3	395.3	580.4	236.1	424.0	477.0	96.4	106.0	178.3	296.3	77.1
	Medium Trucks	18.3	21.1	21.1	31.0	4.5	8.1	9.1	1.8	2.0	3.4	5.6	1.5
	Heavy Trucks	7.9	9.1	9.1	13.4	1.9	3.5	3.9	0.8	0.9	1.5	2.4	0.6
	Buses	3.8	4.3	4.3	6.4	0.9	1.7	1.9	0.4	0.4	0.7	1.2	0.3
	Motorcycles	2.2	2.6	2.6	3.8	1.5	2.8	3.1	0.6	0.7	1.2	1.9	0.5
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	343	395	395	580	236	424	477	96	106	178	296	77
	Motorcycles	2	3	3	4	2	3	3	1	1	1	2	1
USE THESE VOLUMES	**TOTAL**	375	433	433	635	245	440	495	100	110	185	308	80
	Cars	343	395	395	580	236	424	477	96	106	178	296	77
	Medium Trucks	18	21	21	31	4	8	9	2	2	3	6	1
	Heavy Trucks	8	9	9	13	2	3	4	1	1	1	2	1
	Buses	4	5	5	7	1	2	2	0	0	2	2	0
	Motorcycles	2	3	3	4	2	3	3	1	1	1	2	1
	Speed	35.0	35.0	35.0	35.0	25.0	35.0	35.0	35.0	25.0	35.0	35.0	35.0

		Kindig Ln		SR 2011		SR 2006				Sunday Dr		Eisenhower Dr	
		EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	178	168	85	68	200	160	185	115	79	93	338	255
	LOS 'D/E' Analysis Result**	580	580	790	790	790	790	790	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	40	40	45	45	50	50	50	50	40	40	30	30
	Truck %	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		178	168	85	68	200	160	185	115	79	93	338	255
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%	92.4%	92.4%
	Medium Trucks	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%	4.3%	4.3%
	Heavy Trucks	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%	1.8%	1.8%
	Buses	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	160.5	151.4	77.7	61.7	182.8	146.2	169.1	105.1	76.9	90.1	311.8	235.6
	Medium Trucks	9.8	9.2	4.2	3.3	9.8	7.8	9.0	5.6	1.0	1.1	14.4	10.9
	Heavy Trucks	4.2	4.0	1.8	1.4	4.2	3.4	3.9	2.4	0.4	0.5	6.2	4.7
	Buses	2.0	1.9	0.9	0.7	2.0	1.6	1.9	1.2	0.2	0.2	3.0	2.2
	Motorcycles	1.0	1.0	0.5	0.4	1.2	1.0	1.1	0.7	0.5	0.6	2.0	1.5
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	160	151	78	62	183	146	169	105	77	90	312	236
	Motorcycles	1	1	1	0	1	1	1	1	1	1	2	2
USE THESE VOLUMES	**TOTAL**	178	168	85	68	200	160	185	115	79	93	338	255
	Cars	160	151	78	62	183	146	169	105	77	90	312	236
	Medium Trucks	10	9	4	3	10	8	9	6	1	1	14	11
	Heavy Trucks	4	4	2	1	4	3	4	2	0	0	6	5
	Buses	3	3	0	2	2	2	2	1	0	1	4	1
	Motorcycles	1	1	1	0	1	1	1	1	1	1	2	2
	Speed	35.0	35.0	40.0	40.0	45.0	45.0	45.0	45.0	35.0	35.0	25.0	25.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2015 - Existing AM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Evening Peak Hour

		SR 0116 EB						SR 0116 WB						SR 2008 EB				SR 2008 WB				SR 3098		SR 0094 NB			
		Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	503	575	740	705	600	445	445	543	695	705	690	385	95	235	390	563	110	327	275	578	385	420	565	665	665	910
	LOS 'D/E' Analysis Result**	740	790	580	580	580	580	740	790	580	580	580	580	790	790	580	580	790	790	580	580	580	580	580	580	1220	1220
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Design Speed	50	45	30	30	30	30	50	45	30	30	30	30	40	45	40	40	40	45	40	40	40	40	40	40	40	40
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.
		503	575	580	580	580	445	445	543	580	580	580	385	95	235	390	563	110	327	275	578	385	420	565	580	665	910
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%	2.1%	2.1%	2.1%	2.1%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	464.3	531.3	535.9	535.9	535.9	411.2	411.2	501.3	535.9	535.9	535.9	355.7	86.8	214.8	356.5	514.2	100.5	298.4	251.4	527.9	359.6	392.2	516.4	530.2	607.8	831.8
	Medium Trucks	21.5	24.6	24.8	24.8	24.8	19.0	19.0	23.2	24.8	24.8	24.8	16.5	4.6	11.5	19.1	27.5	5.4	16.0	13.4	28.2	14.1	15.4	27.6	28.4	32.5	44.5
	Heavy Trucks	9.3	10.6	10.7	10.7	10.7	8.2	8.2	10.0	10.7	10.7	10.7	7.1	2.0	5.0	8.2	11.9	2.3	6.9	5.8	12.2	6.1	6.7	11.9	12.2	14.0	19.2
	Buses	4.4	5.0	5.1	5.1	5.1	3.9	3.9	4.7	5.1	5.1	5.1	3.4	1.0	2.4	3.9	5.6	1.1	3.3	2.8	5.8	2.9	3.2	5.7	5.8	6.7	9.1
	Motorcycles	3.0	3.5	3.5	3.5	3.5	2.7	2.7	3.3	3.5	3.5	3.5	2.3	0.6	1.4	2.3	3.3	0.7	1.9	1.6	3.4	2.3	2.6	3.4	3.5	4.0	5.4
based on ave. % for all TMS																											
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	464	531	536	536	536	411	411	501	536	536	536	356	87	215	356	514	101	298	251	528	360	392	516	530	608	832
	Motorcycles	3	3	3	3	3	3	3	3	3	3	3	2	1	1	2	3	1	2	2	3	2	3	3	3	4	5
USE THESE VOLUMES	**TOTAL**	503	575	580	580	580	445	445	543	580	580	580	385	95	235	390	563	110	327	275	578	385	420	565	580	665	910
	Cars	464	531	536	536	536	411	411	501	536	536	536	356	87	215	356	514	101	298	251	528	360	392	516	530	608	832
	Medium Trucks	21	25	25	25	25	19	19	23	25	25	25	16	5	11	19	28	5	16	13	28	14	15	28	28	33	44
	Heavy Trucks	9	11	11	11	11	8	8	10	11	11	11	7	2	5	8	12	2	7	6	12	6	7	12	12	14	19
	Buses	6	5	5	5	5	4	4	6	5	5	5	4	0	3	5	6	1	4	3	7	3	3	6	7	6	10
	Motorcycles	3	3	3	3	3	3	3	3	3	3	3	2	1	1	2	3	1	2	2	3	2	3	3	3	4	5
	Speed	45.0	40.0	10.0	10.0	10.0	25.0	45.0	40.0	10.0	10.0	10.0	25.0	35.0	40.0	35.0	35.0	35.0	40.0	35.0	35.0	35.0	35.0	35.0	14.0	35.0	35.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

Existing (2015)

Evening Peak Hour

		SR 0094 SB				High St NB				High St SB				Kindig Ln		SR 2011		SR 2006				Sunday Dr		Eisenhower Dr	
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	670	720	720	790	290	535	593	80	175	325	535	185	163	353	95	93	235	220	228	185	98	65	550	370
	LOS 'D/E' Analysis Result**	580	580	1220	1220	580	580	580	580	580	580	580	580	580	580	790	790	790	790	790	790	580	580	580	580
	# of lanes	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	40	40	40	40	30	40	40	40	30	40	40	40	40	40	45	45	50	50	50	50	40	40	30	30
	Truck %	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%	7.0%	7.0%
	Notes	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		580	580	720	790	290	535	580	80	175	325	535	185	163	353	95	93	235	220	228	185	98	65	550	370
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%	92.4%	92.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%	4.3%	4.3%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%	1.8%	1.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	530.2	530.2	658.1	722.1	279.5	515.6	559.0	77.1	168.7	313.2	515.6	178.3	146.9	318.7	86.8	84.5	214.8	201.1	207.9	169.1	94.9	63.3	508.2	341.9
	Medium Trucks	28.4	28.4	35.2	38.6	5.3	9.8	10.6	1.5	3.2	6.0	9.8	3.4	8.9	19.4	4.6	4.5	11.5	10.8	11.1	9.0	1.2	0.8	23.5	15.8
	Heavy Trucks	12.2	12.2	15.2	16.7	2.3	4.2	4.6	0.6	1.4	2.6	4.2	1.5	3.9	8.4	2.0	2.0	5.0	4.6	4.8	3.9	0.5	0.3	10.2	6.8
	Buses	5.8	5.8	7.2	7.9	1.1	2.0	2.2	0.3	0.7	1.2	2.0	0.7	1.8	4.0	1.0	0.9	2.4	2.2	2.3	1.9	0.2	0.2	4.8	3.2
	Motorcycles	3.5	3.5	4.3	4.7	1.8	3.4	3.6	0.5	1.1	2.0	3.4	1.2	1.0	2.1	0.6	0.6	1.4	1.3	1.4	1.1	0.6	0.4	3.3	2.2
based on ave. % for all TMS																									
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	530	530	658	722	279	516	559	77	169	313	516	178	147	319	87	85	215	201	208	169	95	63	508	342
	Motorcycles	3	3	4	5	2	3	4	1	1	2	3	1	1	2	1	1	1	1	1	1	1	0	3	2
USE THESE VOLUMES	**TOTAL**	580	580	720	790	290	535	580	80	175	325	535	185	163	353	95	93	235	220	228	185	98	65	550	370
	Cars	530	530	658	722	279	516	559	77	169	313	516	178	147	319	87	85	215	201	208	169	95	63	508	342
	Medium Trucks	28	28	35	39	5	10	11	1	3	6	10	3	9	19	5	5	11	11	11	9	1	1	24	16
	Heavy Trucks	12	12	15	17	2	4	5	1	1	3	4	1	4	8	2	2	5	5	5	4	1	0	10	7
	Buses	7	7	8	7	2	2	1	0	1	1	2	2	2	5	0	-1	3	2	3	2	-1	1	5	3
	Motorcycles	3	3	4	5	2	3	4	1	1	2	3	1	1	2	1	1	1	1	1	1	1	0	3	2
	Speed	14.0	14.0	35.0	35.0	25.0	35.0	14.0	35.0	25.0	35.0	35.0	35.0	35.0	35.0	40.0	40.0	45.0	45.0	45.0	45.0	35.0	35.0	25.0	25.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2015 - Existing PM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

TSM (2042)

Morning Peak Hour

		SR 0116 EB						SR 0116 WB					
		Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)
	Predicted Volumes	440	565	760	763	680	500	510	500	583	590	533	355
	LOS 'D/E' Analysis Result**	740	790	580	580	580	580	740	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	45	30	30	30	30	50	45	30	30	30	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.
		440	565	580	580	580	500	510	500	580	580	533	355
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	406.6	522.1	535.9	535.9	535.9	462.0	471.2	462.0	535.9	535.9	492.0	328.0
	Medium Trucks	18.8	24.2	24.8	24.8	24.8	21.4	21.8	21.4	24.8	24.8	22.8	15.2
	Heavy Trucks	8.1	10.4	10.7	10.7	10.7	9.2	9.4	9.2	10.7	10.7	9.8	6.6
	Buses	3.9	4.9	5.1	5.1	5.1	4.4	4.5	4.4	5.1	5.1	4.7	3.1
	Motorcycles	2.6	3.4	3.5	3.5	3.5	3.0	3.1	3.0	3.5	3.5	3.2	2.1
based on ave. % for all TMS													
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	407	522	536	536	536	462	471	462	536	536	492	328
	Motorcycles	3	3	3	3	3	3	3	3	3	3	3	2
USE THESE VOLUMES	**TOTAL**	440	565	580	580	580	500	510	500	580	580	533	355
	Cars	407	522	536	536	536	462	471	462	536	536	492	328
	Medium Trucks	19	24	25	25	25	21	22	21	25	25	23	15
	Heavy Trucks	8	10	11	11	11	9	9	9	11	11	10	7
	Buses	3	6	5	5	5	5	5	5	5	5	5	3
	Motorcycles	3	3	3	3	3	3	3	3	3	3	3	2
	Speed	45.0	40.0	10.0	10.0	10.0	25.0	45.0	40.0	10.0	10.0	25.0	25.0

		SR 2008 EB				SR 2008 WB				SR 3098		SR 0094 NB			
		Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	125	330	398	573	100	260	273	358	360	278	500	535	535	685
	LOS 'D/E' Analysis Result**	790	790	580	580	790	790	580	580	580	580	1220	1220	1220	1220
	# of lanes	1	1	1	1	1	1	1	1	1	1	2	2	2	2
	Design Speed	40	45	40	40	40	45	40	40	40	40	40	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		125	330	398	573	100	260	273	358	360	278	500	535	535	685
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	114.3	301.6	363.3	523.3	91.4	237.7	249.1	326.8	336.2	259.2	457.0	489.0	489.0	626.1
	Medium Trucks	6.1	16.1	19.4	28.0	4.9	12.7	13.3	17.5	13.2	10.2	24.4	26.2	26.2	33.5
	Heavy Trucks	2.6	7.0	8.4	12.1	2.1	5.5	5.8	7.5	5.7	4.4	10.6	11.3	11.3	14.5
	Buses	1.3	3.3	4.0	5.7	1.0	2.6	2.7	3.6	2.7	2.1	5.0	5.4	5.4	6.9
	Motorcycles	0.7	2.0	2.4	3.4	0.6	1.5	1.6	2.1	2.2	1.7	3.0	3.2	3.2	4.1
based on ave. % for all TMS															
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	114	302	363	523	91	238	249	327	336	259	457	489	489	626
	Motorcycles	1	2	2	3	1	2	2	2	2	2	3	3	3	4
USE THESE VOLUMES	**TOTAL**	125	330	398	573	100	260	273	358	360	278	500	535	535	685
	Cars	114	302	363	523	91	238	249	327	336	259	457	489	489	626
	Medium Trucks	6	16	19	28	5	13	13	17	13	10	24	26	26	33
	Heavy Trucks	3	7	8	12	2	5	6	8	6	4	11	11	11	14
	Buses	1	3	6	7	1	2	3	4	3	3	5	6	6	8
	Motorcycles	1	2	2	3	1	2	2	2	2	2	3	3	3	4
	Speed	35.0	40.0	35.0	35.0	35.0	40.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0

**** Segment Service Volume when Level of Service goes from LOS D to LOS E.**

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

TSM (2042)

Morning Peak Hour

		SR 0094 SB				High St NB				High St SB				Kindig Ln		SR 2011		SR 2006				Sunday Dr		Eisenhower Dr	
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	460	533	533	775	305	538	603	105	140	230	378	85	223	205	108	88	250	203	230	145	108	118	420	318
	LOS 'D/E' Analysis Result**	1220	1220	1220	1220	580	580	580	580	580	580	580	580	580	580	790	790	790	790	790	790	580	580	580	580
	# of lanes	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	40	40	40	40	30	40	40	40	30	40	40	40	40	40	45	45	50	50	50	50	40	40	30	30
	Truck %	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	9.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		460	533	533	775	305	538	580	105	140	230	378	85	223	205	108	88	250	203	230	145	108	118	420	318
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	96.4%	90.4%	90.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%	92.4%	92.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	5.5%	5.5%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%	4.3%	4.3%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	2.4%	2.4%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%	1.8%	1.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	420.5	486.7	486.7	708.4	293.9	518.0	559.0	101.2	134.9	221.7	363.8	81.9	201.2	185.3	98.3	80.0	228.5	185.1	210.2	132.5	104.7	114.4	388.1	293.4
	Medium Trucks	22.5	26.0	26.0	37.9	5.6	9.9	10.6	1.9	2.6	4.2	6.9	1.6	12.2	11.3	5.3	4.3	12.2	9.9	11.2	7.1	1.3	1.4	18.0	13.6
	Heavy Trucks	9.7	11.2	11.2	16.4	2.4	4.3	4.6	0.8	1.1	1.8	3.0	0.7	5.3	4.9	2.3	1.8	5.3	4.3	4.9	3.1	0.6	0.6	7.8	5.9
	Buses	4.6	5.3	5.3	7.8	1.1	2.0	2.2	0.4	0.5	0.9	1.4	0.3	2.5	2.3	1.1	0.9	2.5	2.0	2.3	1.5	0.3	0.3	3.7	2.8
	Motorcycles	2.7	3.2	3.2	4.6	1.9	3.4	3.6	0.7	0.9	1.4	2.4	0.5	1.3	1.2	0.6	0.5	1.5	1.2	1.4	0.9	0.7	0.7	2.5	1.9
based on ave. % for all TMS																									
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	420	487	487	708	294	518	559	101	135	222	364	82	201	185	98	80	229	185	210	133	105	114	388	293
	Motorcycles	3	3	3	5	2	3	4	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	3	2
USE THESE VOLUMES	TOTAL	460	533	533	775	305	538	580	105	140	230	378	85	223	205	108	88	250	203	230	145	108	118	420	318
	Cars	420	487	487	708	294	518	559	101	135	222	364	82	201	185	98	80	229	185	210	133	105	114	388	293
	Medium Trucks	22	26	26	38	6	10	11	2	3	4	7	2	12	11	5	4	12	10	11	7	1	1	18	14
	Heavy Trucks	10	11	11	16	2	4	5	1	1	2	3	1	5	5	2	2	5	4	5	3	1	1	8	6
	Buses	5	6	6	8	1	3	1	0	0	1	2	-1	4	3	2	1	3	3	3	1	-1	1	3	3
	Motorcycles	3	3	3	5	2	3	4	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	3	2
	Speed	35.0	35.0	35.0	35.0	25.0	35.0	14.0	35.0	25.0	35.0	35.0	35.0	35.0	35.0	40.0	40.0	45.0	45.0	45.0	45.0	35.0	35.0	25.0	25.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - TSM AM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

TSM (2042)

Evening Peak Hour

		SR 0116 EB						SR 0116 WB					
		Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)	Geiselman Rd (T478) to Sunday Dr (T460)/ Race Horse Rd (SR 2021)	Sunday Dr (T460)/ Race Horse Rd (SR 2021) to Centennial Rd (SR 2006)	Centennial Rd (SR 2006) to Church St/2nd St (SR 2011)	Church St/2nd St (SR 2011) to 5th St (Boro)	5th St (Boro) to Oxford Ave/Elm Ave (SR 2008)	Oxford Ave/ Elm Ave (SR 2008) to Maple Ave (Boro)
	Predicted Volumes	625	705	905	860	733	545	553	665	850	860	845	475
	LOS 'D/E' Analysis Result**	740	790	580	580	580	580	740	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1	1	1	1	1
	Design Speed	50	45	30	30	30	30	50	45	30	30	30	30
	Truck %	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	Notes	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	LOS 'D/E'	PRED.
		625	705	580	580	580	545	553	665	580	580	580	475
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%	92.4%
	Medium Trucks	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
	Heavy Trucks	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	577.5	651.4	535.9	535.9	535.9	503.6	510.5	614.5	535.9	535.9	535.9	438.9
	Medium Trucks	26.7	30.2	24.8	24.8	24.8	23.3	23.6	28.4	24.8	24.8	24.8	20.3
	Heavy Trucks	11.5	13.0	10.7	10.7	10.7	10.1	10.2	12.3	10.7	10.7	10.7	8.8
	Buses	5.5	6.2	5.1	5.1	5.1	4.8	4.8	5.8	5.1	5.1	5.1	4.2
	Motorcycles	3.8	4.2	3.5	3.5	3.5	3.3	3.3	4.0	3.5	3.5	3.5	2.9
	based on ave. % for all TMS												
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	577	651	536	536	536	504	511	614	536	536	536	439
	Motorcycles	4	4	3	3	3	3	3	4	3	3	3	3
USE THESE VOLUMES	**TOTAL**	625	705	580	580	580	545	553	665	580	580	580	475
	Cars	577	651	536	536	536	504	511	614	536	536	536	439
	Medium Trucks	27	30	25	25	25	23	24	28	25	25	25	20
	Heavy Trucks	12	13	11	11	11	10	10	12	11	11	11	9
	Buses	5	7	5	5	5	5	5	7	5	5	5	4
	Motorcycles	4	4	3	3	3	3	3	4	3	3	3	3
	Speed	45.0	40.0	10.0	10.0	10.0	25.0	45.0	40.0	10.0	10.0	10.0	25.0

		SR 2008 EB				SR 2008 WB				SR 3098		SR 0094 NB			
		Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	Church St (SR 2011) to Oxford Ave (T476)	Oxford Ave (T476) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Main St/3rd Ave (SR 0116)	Main St/3rd Ave (SR 0116) to High St (T535/Boro)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)	Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	120	290	480	690	138	400	340	708	475	515	690	813	813	1,115
	LOS 'D/E' Analysis Result**	790	790	580	580	790	790	580	580	580	580	1220	1220	1220	1220
	# of lanes	1	1	1	1	1	1	1	1	1	1	2	2	2	2
	Design Speed	40	45	40	40	40	45	40	40	40	40	40	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	8.0%	8.0%	8.0%	8.0%
	Notes	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.
		120	290	480	580	138	400	340	580	475	515	690	813	813	1115
Truck Percentage Breakout	**Cars**	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	**Cars**	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	91.4%	93.4%	93.4%	91.4%	91.4%	91.4%	91.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	3.7%	3.7%	4.9%	4.9%	4.9%	4.9%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.6%	1.6%	2.1%	2.1%	2.1%	2.1%
	Buses	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	**Cars**	109.7	265.1	438.7	530.2	125.7	365.6	310.8	530.2	443.6	481.0	630.7	742.7	742.7	1019.2
	Medium Trucks	5.9	14.2	23.5	28.4	6.7	19.6	16.6	28.4	17.4	18.9	33.7	39.7	39.7	54.5
	Heavy Trucks	2.5	6.1	10.1	12.2	2.9	8.4	7.2	12.2	7.5	8.2	14.6	17.2	17.2	23.5
	Buses	1.2	2.9	4.8	5.8	1.4	4.0	3.4	5.8	3.6	3.9	6.9	8.1	8.1	11.2
	Motorcycles	0.7	1.7	2.9	3.5	0.8	2.4	2.0	3.5	2.9	3.1	4.1	4.8	4.8	6.6
	based on ave. % for all TMS														
Motor-cycles?	**Check motorcycles?**	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Cars	110	265	439	530	126	366	311	530	444	481	631	743	743	1019
	Motorcycles	1	2	3	3	1	2	2	3	3	3	4	5	5	7
USE THESE VOLUMES	**TOTAL**	120	290	480	580	138	400	340	580	475	515	690	813	813	1115
	Cars	110	265	439	530	126	366	311	530	444	481	631	743	743	1019
	Medium Trucks	6	14	23	28	7	20	17	28	17	19	34	40	40	55
	Heavy Trucks	3	6	10	12	3	8	7	12	8	8	15	17	17	24
	Buses	0	3	5	7	1	4	3	7	3	4	6	8	8	10
	Motorcycles	1	2	3	3	1	2	2	3	3	3	4	5	5	7
	Speed	35.0	40.0	35.0	14.0	35.0	40.0	35.0	14.0	35.0	35.0	35.0	35.0	35.0	35.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - TSM PM
Printed: 5/2/2019 6:25 PM

E00187 - Hanover Area Imp/Eisenhower Drive Extension

Vehicles Per Hour - Vehicle Type Distribution

TSM (2042)

Evening Peak Hour

		SR 0094 SB				High St NB			
		Third St (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kuhn Dr/Dart Dr (Boro)	Kuhn Dr/Dart Dr (Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)
	Predicted Volumes	820	880	880	965	365	655	725	85
	LOS 'D/E' Analysis Result**	1220	1220	1220	1220	580	580	580	580
	# of lanes	2	2	2	2	1	1	1	1
	Design Speed	40	40	40	40	30	40	40	40
	Truck %	8.0%	8.0%	8.0%	8.0%	3.0%	3.0%	3.0%	3.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	LOS 'D/E'	PRED.
		820	880	880	965	365	580	580	85
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	96.4%	96.4%	96.4%	96.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.8%	1.8%	1.8%	1.8%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.8%	0.8%	0.8%	0.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	0.4%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	749.5	804.4	804.4	882.1	351.8	559.0	559.0	81.9
	Medium Trucks	40.1	43.0	43.0	47.2	6.7	10.6	10.6	1.6
	Heavy Trucks	17.3	18.6	18.6	20.4	2.9	4.6	4.6	0.7
	Buses	8.2	8.8	8.8	9.7	1.4	2.2	2.2	0.3
	Motorcycles	4.9	5.2	5.2	5.7	2.3	3.6	3.6	0.5
based on ave. % for all TMS									
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No
	Cars	750	804	804	882	352	559	559	82
	Motorcycles	5	5	5	6	2	4	4	1
USE THESE VOLUMES	TOTAL	820	880	880	965	365	580	580	85
	Cars	750	804	804	882	352	559	559	82
	Medium Trucks	40	43	43	47	7	11	11	2
	Heavy Trucks	17	19	19	20	3	5	5	1
	Buses	8	9	9	10	1	1	1	-1
	Motorcycles	5	5	5	6	2	4	4	1
	Speed	35.0	35.0	35.0	35.0	25.0	14.0	14.0	35.0

		High St SB				Kindig Ln		SR 2011	
		Maple Ave (Boro) to Elm Ave (SR 3098/Boro)	Elm Ave (SR 3098/Boro) to Kindig Ln (T477/Boro)	Kindig Ln (T477/Boro) to Eisenhower Dr (T679/Boro)	Eisenhower Dr (T679/Boro) to Wetzel Dr (Boro)	EB: Oxford Ave (SR 2008) to High St (T477/Boro)	WB: Oxford Ave (SR 2008) to High St (T477/Boro)	NB: Main St (SR 0116) to Edgegrove Rd (SR 2008)	SB: Main St (SR 0116) to Edgegrove Rd (SR 2008)
	Predicted Volumes	220	398	655	195	200	433	123	118
	LOS 'D/E' Analysis Result**	580	580	580	580	580	580	790	790
	# of lanes	1	1	1	1	1	1	1	1
	Design Speed	30	40	40	40	40	40	45	45
	Truck %	3.0%	3.0%	3.0%	3.0%	9.0%	9.0%	8.0%	8.0%
	Notes	PRED.	PRED.	LOS 'D/E'	PRED.	PRED.	PRED.	PRED.	PRED.
		220	398	580	195	200	433	123	118
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	96.4%	96.4%	96.4%	96.4%	90.4%	90.4%	91.4%	91.4%
	Medium Trucks	1.8%	1.8%	1.8%	1.8%	5.5%	5.5%	4.9%	4.9%
	Heavy Trucks	0.8%	0.8%	0.8%	0.8%	2.4%	2.4%	2.1%	2.1%
	Buses	0.4%	0.4%	0.4%	0.4%	1.1%	1.1%	1.0%	1.0%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	212.0	383.1	559.0	187.9	180.8	391.0	112.0	107.4
	Medium Trucks	4.0	7.3	10.6	3.6	11.0	23.8	6.0	5.7
	Heavy Trucks	1.7	3.1	4.6	1.5	4.8	10.3	2.6	2.5
	Buses	0.8	1.5	2.2	0.7	2.3	4.9	1.2	1.2
	Motorcycles	1.4	2.5	3.6	1.2	1.2	2.5	0.7	0.7
based on ave. % for all TMS									
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No
	Cars	212	383	559	188	181	391	112	107
	Motorcycles	1	2	4	1	1	3	1	1
USE THESE VOLUMES	TOTAL	220	398	580	195	200	433	123	118
	Cars	212	383	559	188	181	391	112	107
	Medium Trucks	4	7	11	4	11	24	6	6
	Heavy Trucks	2	3	5	2	5	10	3	2
	Buses	1	3	1	0	2	5	1	2
	Motorcycles	1	2	4	1	1	3	1	1
	Speed	25.0	35.0	14.0	35.0	35.0	35.0	40.0	40.0

		SR 2006				Sunday Dr		Eisenhower Dr	
		EB: Bender Rd (T464) to Sunday Dr (T460)	EB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	WB: Bender Rd (T464) to Sunday Dr (T460)	WB: Sunday Dr (T460) to Hanover Rd/Main St (SR 0116)	NB: Main St (SR 0116) to Centennial Rd (SR 2006)	SB: Main St (SR 0116) to Centennial Rd (SR 2006)	EB: High St (T535/Boro) to Carlisle St (SR 0094)	WB: High St (T535/Boro) to Carlisle St (SR 0094)
	Predicted Volumes	290	273	283	233	130	89	673	460
	LOS 'D/E' Analysis Result**	790	790	790	790	580	580	580	580
	# of lanes	1	1	1	1	1	1	1	1
	Design Speed	50	50	50	50	40	40	30	30
	Truck %	8.0%	8.0%	8.0%	8.0%	2.0%	2.0%	7.0%	7.0%
	Notes	PRED.	PRED.	PRED.	PRED.	PRED.	PRED.	LOS 'D/E'	PRED.
		290	273	283	233	130	89	580	460
Truck Percentage Breakout	Cars	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%	92.2%
	Medium Trucks	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
	Heavy Trucks	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
	Buses	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
	% Check	ok	ok	ok	ok	ok	ok	ok	ok
Percentage Broken Out	Cars	91.4%	91.4%	91.4%	91.4%	97.4%	97.4%	92.4%	92.4%
	Medium Trucks	4.9%	4.9%	4.9%	4.9%	1.2%	1.2%	4.3%	4.3%
	Heavy Trucks	2.1%	2.1%	2.1%	2.1%	0.5%	0.5%	1.8%	1.8%
	Buses	1.0%	1.0%	1.0%	1.0%	0.3%	0.3%	0.9%	0.9%
	Motorcycles	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Pre-Motorcycle Adjustment Volumes	Cars	265.1	249.1	258.2	212.5	126.6	86.7	535.9	425.0
	Medium Trucks	14.2	13.3	13.8	11.4	1.6	1.1	24.8	19.7
	Heavy Trucks	6.1	5.8	6.0	4.9	0.7	0.5	10.7	8.5
	Buses	2.9	2.7	2.8	2.3	0.3	0.2	5.1	4.0
	Motorcycles	1.7	1.6	1.7	1.4	0.8	0.6	3.5	2.8
based on ave. % for all TMS									
Motor-cycles?	Check motorcycles?	No	No	No	No	No	No	No	No
	Cars	265	249	258	213	127	87	536	425
	Motorcycles	2	2	2	1	1	1	3	3
USE THESE VOLUMES	TOTAL	290	273	283	233	130	89	580	460
	Cars	265	249	258	213	127	87	536	425
	Medium Trucks	14	13	14	11	2	1	25	20
	Heavy Trucks	6	6	6	5	1	0	11	8
	Buses	3	3	3	3	-1	0	5	4
	Motorcycles	2	2	2	1	1	1	3	3
	Speed	45.0	45.0	45.0	45.0	35.0	35.0	10.0	25.0

** Segment Service Volume when Level of Service goes from LOS D to LOS E.

File: http://projectcenter.jmt.com/02/02-0308-012/ProjectFiles/00-JMT/12-Traffic/Traffic Projections/Noise Traffic Data_EisenhowerDriveExtension.xlsx
Tab: 2042 - TSM PM
Printed: 5/2/2019 6:25 PM

Appendix II

TNM RESULTS

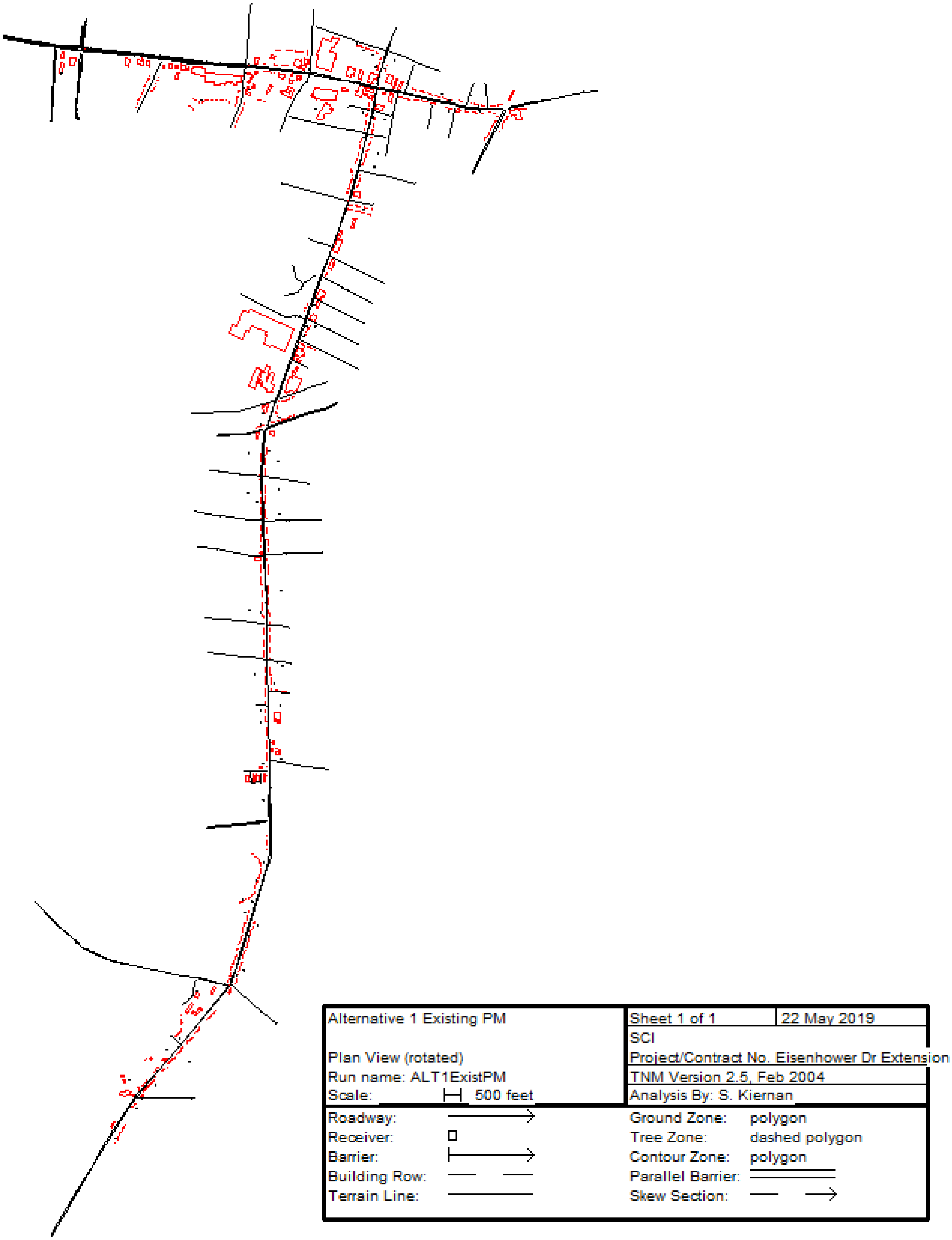
INTRODUCTION

Worst case noise levels are predicted using TNM Version 2.5 for Existing 2015 and 2042 Build conditions.

Valid noise level predictions can be made under any traffic conditions deemed appropriate for study once the model is created. An unlimited number of modeled receptors could be included in the subsequent model runs.

TNM sound level results output and TNM layout plan views are included in the following pages.

TNM Plan View of 2015 Existing Worst Case:



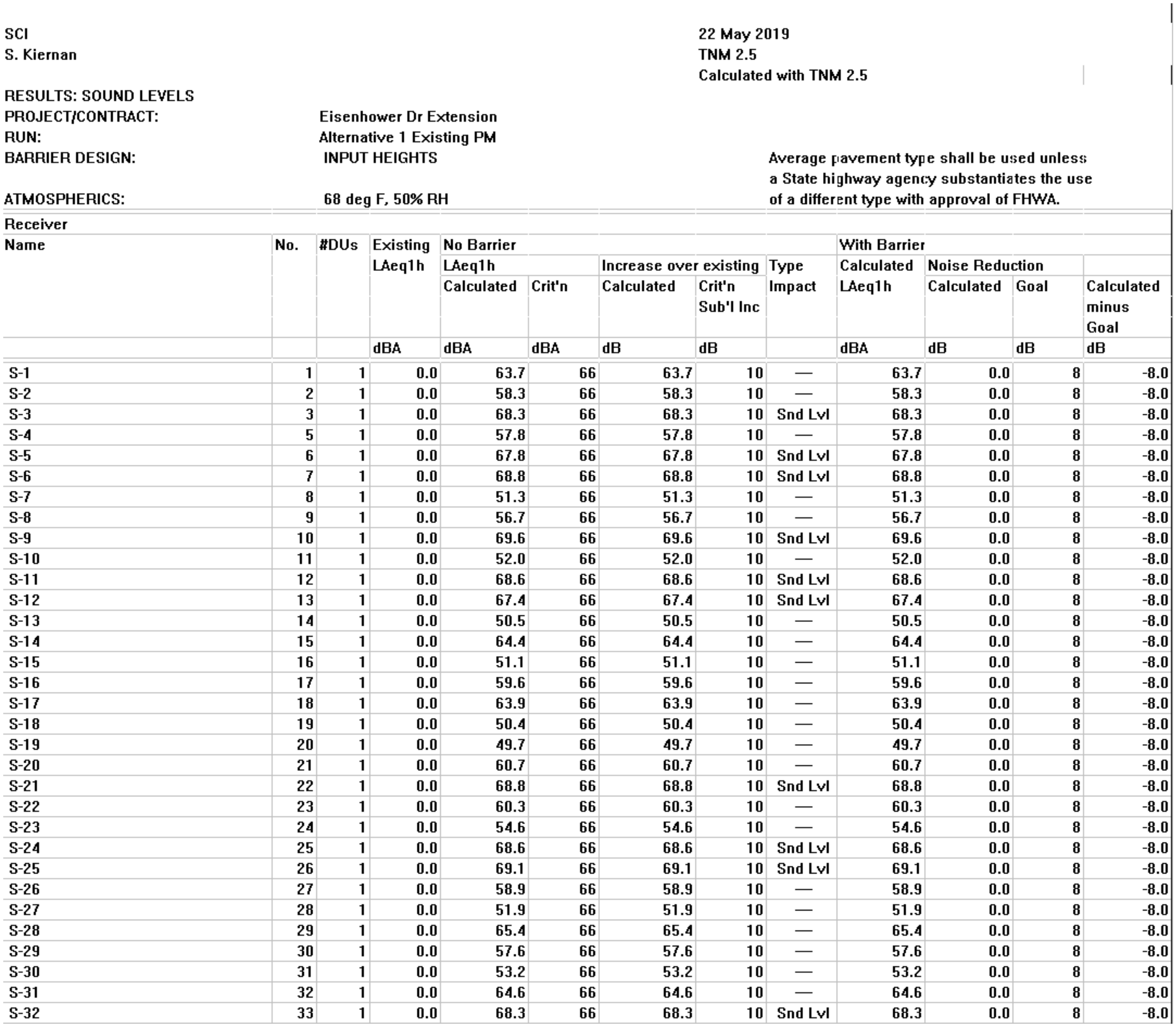
Alternative 1 Existing PM

Plan View (rotated)
Run name: ALT1ExistPM
Scale: ⊢⊣ 500 feet

Sheet 1 of 1 | 22 May 2019
SCI
Project/Contract No. Eisenhower Dr Extension
TNM Version 2.5, Feb 2004
Analysis By: S. Kiernan

Roadway: →
Receiver: □
Barrier: ⊢→
Building Row: — —
Terrain Line: —
Ground Zone: polygon
Tree Zone: dashed polygon
Contour Zone: polygon
Parallel Barrier: ═
Skew Section: — →

2015 Existing Worst Case:



SCI
S. Kiernan

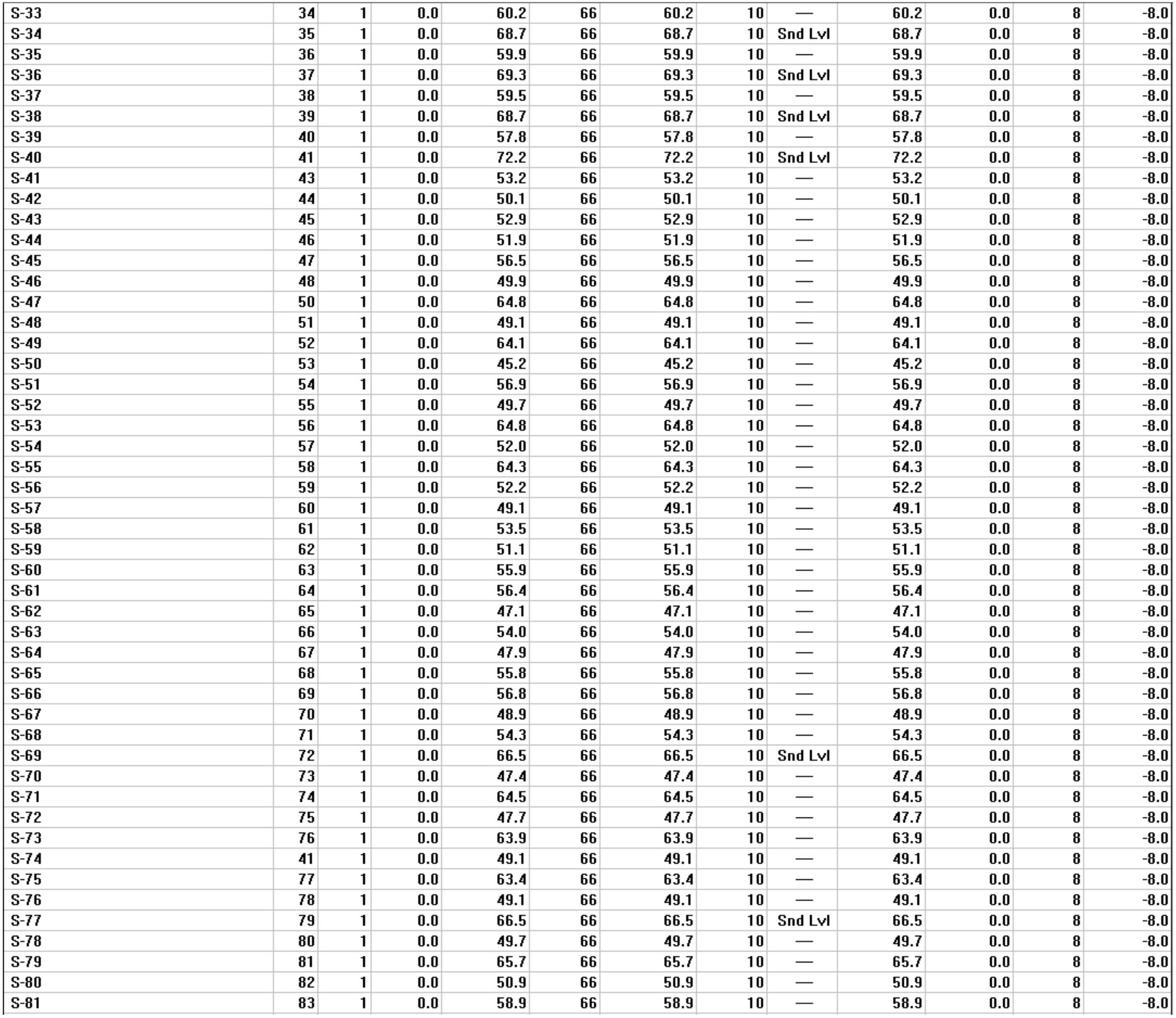
22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: Alternative 1 Existing PM
BARRIER DESIGN: INPUT HEIGHTS

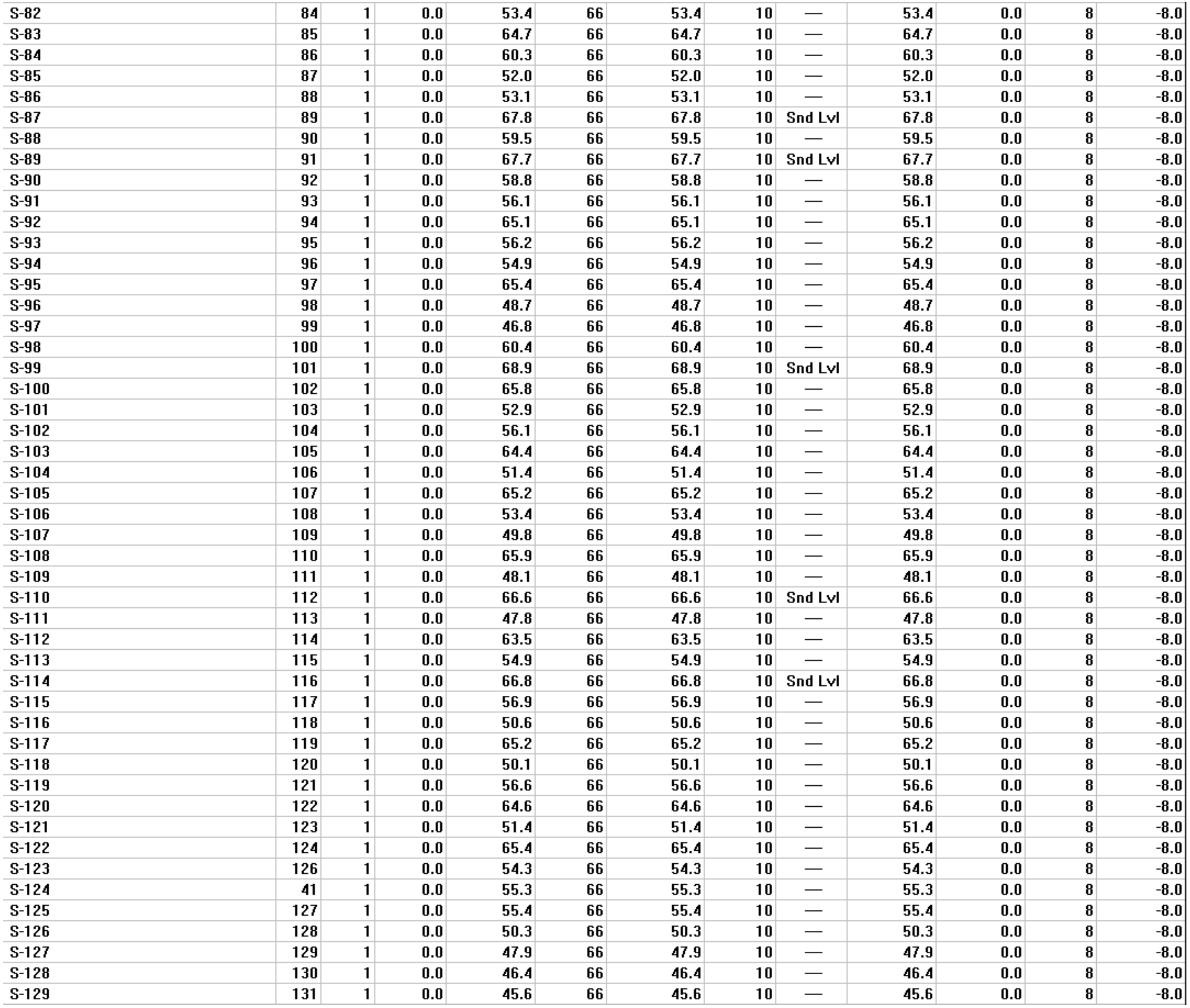
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
S-1	1	1	0.0	63.7	66	63.7	10	—	63.7	0.0	8	-8.0
S-2	2	1	0.0	58.3	66	58.3	10	—	58.3	0.0	8	-8.0
S-3	3	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
S-4	5	1	0.0	57.8	66	57.8	10	—	57.8	0.0	8	-8.0
S-5	6	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
S-6	7	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
S-7	8	1	0.0	51.3	66	51.3	10	—	51.3	0.0	8	-8.0
S-8	9	1	0.0	56.7	66	56.7	10	—	56.7	0.0	8	-8.0
S-9	10	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
S-10	11	1	0.0	52.0	66	52.0	10	—	52.0	0.0	8	-8.0
S-11	12	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
S-12	13	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
S-13	14	1	0.0	50.5	66	50.5	10	—	50.5	0.0	8	-8.0
S-14	15	1	0.0	64.4	66	64.4	10	—	64.4	0.0	8	-8.0
S-15	16	1	0.0	51.1	66	51.1	10	—	51.1	0.0	8	-8.0
S-16	17	1	0.0	59.6	66	59.6	10	—	59.6	0.0	8	-8.0
S-17	18	1	0.0	63.9	66	63.9	10	—	63.9	0.0	8	-8.0
S-18	19	1	0.0	50.4	66	50.4	10	—	50.4	0.0	8	-8.0
S-19	20	1	0.0	49.7	66	49.7	10	—	49.7	0.0	8	-8.0
S-20	21	1	0.0	60.7	66	60.7	10	—	60.7	0.0	8	-8.0
S-21	22	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
S-22	23	1	0.0	60.3	66	60.3	10	—	60.3	0.0	8	-8.0
S-23	24	1	0.0	54.6	66	54.6	10	—	54.6	0.0	8	-8.0
S-24	25	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
S-25	26	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
S-26	27	1	0.0	58.9	66	58.9	10	—	58.9	0.0	8	-8.0
S-27	28	1	0.0	51.9	66	51.9	10	—	51.9	0.0	8	-8.0
S-28	29	1	0.0	65.4	66	65.4	10	—	65.4	0.0	8	-8.0
S-29	30	1	0.0	57.6	66	57.6	10	—	57.6	0.0	8	-8.0
S-30	31	1	0.0	53.2	66	53.2	10	—	53.2	0.0	8	-8.0
S-31	32	1	0.0	64.6	66	64.6	10	—	64.6	0.0	8	-8.0
S-32	33	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0

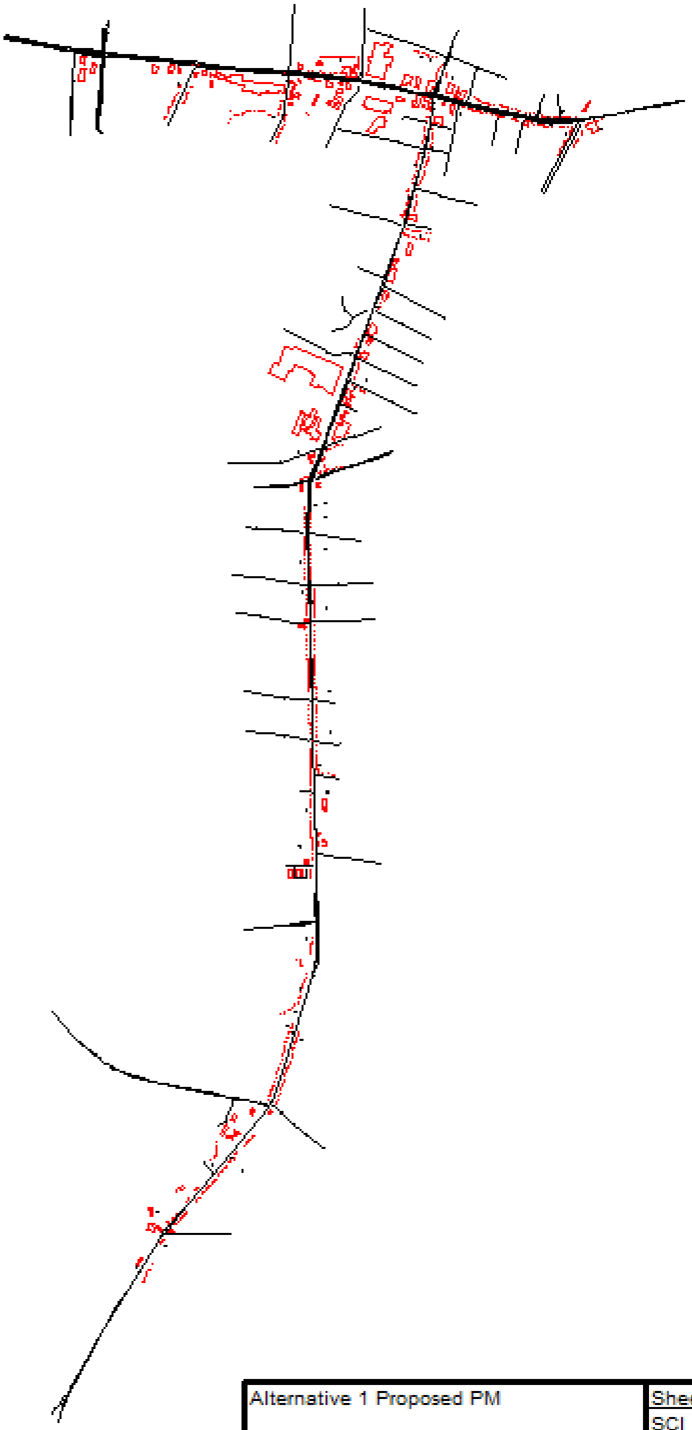


S-33	34	1	0.0	60.2	66	60.2	10	—	60.2	0.0	8	-8.0
S-34	35	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
S-35	36	1	0.0	59.9	66	59.9	10	—	59.9	0.0	8	-8.0
S-36	37	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
S-37	38	1	0.0	59.5	66	59.5	10	—	59.5	0.0	8	-8.0
S-38	39	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
S-39	40	1	0.0	57.8	66	57.8	10	—	57.8	0.0	8	-8.0
S-40	41	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
S-41	43	1	0.0	53.2	66	53.2	10	—	53.2	0.0	8	-8.0
S-42	44	1	0.0	50.1	66	50.1	10	—	50.1	0.0	8	-8.0
S-43	45	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	-8.0
S-44	46	1	0.0	51.9	66	51.9	10	—	51.9	0.0	8	-8.0
S-45	47	1	0.0	56.5	66	56.5	10	—	56.5	0.0	8	-8.0
S-46	48	1	0.0	49.9	66	49.9	10	—	49.9	0.0	8	-8.0
S-47	50	1	0.0	64.8	66	64.8	10	—	64.8	0.0	8	-8.0
S-48	51	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	-8.0
S-49	52	1	0.0	64.1	66	64.1	10	—	64.1	0.0	8	-8.0
S-50	53	1	0.0	45.2	66	45.2	10	—	45.2	0.0	8	-8.0
S-51	54	1	0.0	56.9	66	56.9	10	—	56.9	0.0	8	-8.0
S-52	55	1	0.0	49.7	66	49.7	10	—	49.7	0.0	8	-8.0
S-53	56	1	0.0	64.8	66	64.8	10	—	64.8	0.0	8	-8.0
S-54	57	1	0.0	52.0	66	52.0	10	—	52.0	0.0	8	-8.0
S-55	58	1	0.0	64.3	66	64.3	10	—	64.3	0.0	8	-8.0
S-56	59	1	0.0	52.2	66	52.2	10	—	52.2	0.0	8	-8.0
S-57	60	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	-8.0
S-58	61	1	0.0	53.5	66	53.5	10	—	53.5	0.0	8	-8.0
S-59	62	1	0.0	51.1	66	51.1	10	—	51.1	0.0	8	-8.0
S-60	63	1	0.0	55.9	66	55.9	10	—	55.9	0.0	8	-8.0
S-61	64	1	0.0	56.4	66	56.4	10	—	56.4	0.0	8	-8.0
S-62	65	1	0.0	47.1	66	47.1	10	—	47.1	0.0	8	-8.0
S-63	66	1	0.0	54.0	66	54.0	10	—	54.0	0.0	8	-8.0
S-64	67	1	0.0	47.9	66	47.9	10	—	47.9	0.0	8	-8.0
S-65	68	1	0.0	55.8	66	55.8	10	—	55.8	0.0	8	-8.0
S-66	69	1	0.0	56.8	66	56.8	10	—	56.8	0.0	8	-8.0
S-67	70	1	0.0	48.9	66	48.9	10	—	48.9	0.0	8	-8.0
S-68	71	1	0.0	54.3	66	54.3	10	—	54.3	0.0	8	-8.0
S-69	72	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
S-70	73	1	0.0	47.4	66	47.4	10	—	47.4	0.0	8	-8.0
S-71	74	1	0.0	64.5	66	64.5	10	—	64.5	0.0	8	-8.0
S-72	75	1	0.0	47.7	66	47.7	10	—	47.7	0.0	8	-8.0
S-73	76	1	0.0	63.9	66	63.9	10	—	63.9	0.0	8	-8.0
S-74	41	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	-8.0
S-75	77	1	0.0	63.4	66	63.4	10	—	63.4	0.0	8	-8.0
S-76	78	1	0.0	49.1	66	49.1	10	—	49.1	0.0	8	-8.0
S-77	79	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
S-78	80	1	0.0	49.7	66	49.7	10	—	49.7	0.0	8	-8.0
S-79	81	1	0.0	65.7	66	65.7	10	—	65.7	0.0	8	-8.0
S-80	82	1	0.0	50.9	66	50.9	10	—	50.9	0.0	8	-8.0
S-81	83	1	0.0	58.9	66	58.9	10	—	58.9	0.0	8	-8.0



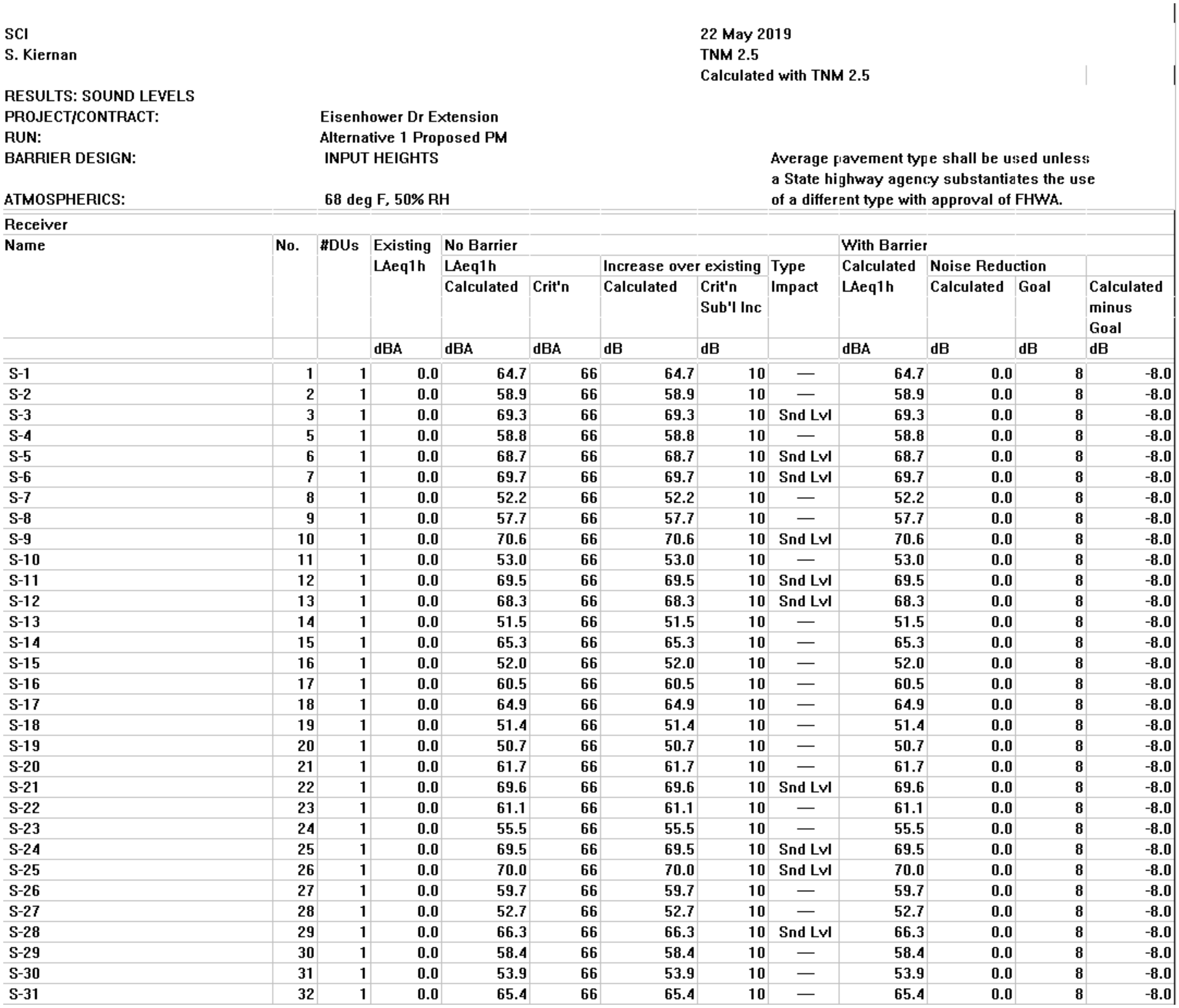
S-82	84	1	0.0	53.4	66	53.4	10	—	53.4	0.0	8	-8.0
S-83	85	1	0.0	64.7	66	64.7	10	—	64.7	0.0	8	-8.0
S-84	86	1	0.0	60.3	66	60.3	10	—	60.3	0.0	8	-8.0
S-85	87	1	0.0	52.0	66	52.0	10	—	52.0	0.0	8	-8.0
S-86	88	1	0.0	53.1	66	53.1	10	—	53.1	0.0	8	-8.0
S-87	89	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
S-88	90	1	0.0	59.5	66	59.5	10	—	59.5	0.0	8	-8.0
S-89	91	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
S-90	92	1	0.0	58.8	66	58.8	10	—	58.8	0.0	8	-8.0
S-91	93	1	0.0	56.1	66	56.1	10	—	56.1	0.0	8	-8.0
S-92	94	1	0.0	65.1	66	65.1	10	—	65.1	0.0	8	-8.0
S-93	95	1	0.0	56.2	66	56.2	10	—	56.2	0.0	8	-8.0
S-94	96	1	0.0	54.9	66	54.9	10	—	54.9	0.0	8	-8.0
S-95	97	1	0.0	65.4	66	65.4	10	—	65.4	0.0	8	-8.0
S-96	98	1	0.0	48.7	66	48.7	10	—	48.7	0.0	8	-8.0
S-97	99	1	0.0	46.8	66	46.8	10	—	46.8	0.0	8	-8.0
S-98	100	1	0.0	60.4	66	60.4	10	—	60.4	0.0	8	-8.0
S-99	101	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
S-100	102	1	0.0	65.8	66	65.8	10	—	65.8	0.0	8	-8.0
S-101	103	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	-8.0
S-102	104	1	0.0	56.1	66	56.1	10	—	56.1	0.0	8	-8.0
S-103	105	1	0.0	64.4	66	64.4	10	—	64.4	0.0	8	-8.0
S-104	106	1	0.0	51.4	66	51.4	10	—	51.4	0.0	8	-8.0
S-105	107	1	0.0	65.2	66	65.2	10	—	65.2	0.0	8	-8.0
S-106	108	1	0.0	53.4	66	53.4	10	—	53.4	0.0	8	-8.0
S-107	109	1	0.0	49.8	66	49.8	10	—	49.8	0.0	8	-8.0
S-108	110	1	0.0	65.9	66	65.9	10	—	65.9	0.0	8	-8.0
S-109	111	1	0.0	48.1	66	48.1	10	—	48.1	0.0	8	-8.0
S-110	112	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
S-111	113	1	0.0	47.8	66	47.8	10	—	47.8	0.0	8	-8.0
S-112	114	1	0.0	63.5	66	63.5	10	—	63.5	0.0	8	-8.0
S-113	115	1	0.0	54.9	66	54.9	10	—	54.9	0.0	8	-8.0
S-114	116	1	0.0	66.8	66	66.8	10	Snd Lvl	66.8	0.0	8	-8.0
S-115	117	1	0.0	56.9	66	56.9	10	—	56.9	0.0	8	-8.0
S-116	118	1	0.0	50.6	66	50.6	10	—	50.6	0.0	8	-8.0
S-117	119	1	0.0	65.2	66	65.2	10	—	65.2	0.0	8	-8.0
S-118	120	1	0.0	50.1	66	50.1	10	—	50.1	0.0	8	-8.0
S-119	121	1	0.0	56.6	66	56.6	10	—	56.6	0.0	8	-8.0
S-120	122	1	0.0	64.6	66	64.6	10	—	64.6	0.0	8	-8.0
S-121	123	1	0.0	51.4	66	51.4	10	—	51.4	0.0	8	-8.0
S-122	124	1	0.0	65.4	66	65.4	10	—	65.4	0.0	8	-8.0
S-123	126	1	0.0	54.3	66	54.3	10	—	54.3	0.0	8	-8.0
S-124	41	1	0.0	55.3	66	55.3	10	—	55.3	0.0	8	-8.0
S-125	127	1	0.0	55.4	66	55.4	10	—	55.4	0.0	8	-8.0
S-126	128	1	0.0	50.3	66	50.3	10	—	50.3	0.0	8	-8.0
S-127	129	1	0.0	47.9	66	47.9	10	—	47.9	0.0	8	-8.0
S-128	130	1	0.0	46.4	66	46.4	10	—	46.4	0.0	8	-8.0
S-129	131	1	0.0	45.6	66	45.6	10	—	45.6	0.0	8	-8.0

TNM Plan View of 2042 Build Conditions:



Alternative 1 Proposed PM	Sheet 1 of 1 22 May 2019
	SCI
Plan View (rotated)	Project/Contract No. Eisenhower Dr Extension
Run name: ALT1PropPM	TNM Version 2.5, Feb 2004
Scale: ├┤ 500 feet	Analysis By: S. Kiernan
Roadway: ——→	Ground Zone: polygon
Receiver: ☐	Tree Zone: dashed polygon
Barrier: ├——→	Contour Zone: polygon
Building Row: — —	Parallel Barrier: ═══
Terrain Line: ——	Skew Section: — →

2042 Build:



SCI
S. Kiernan

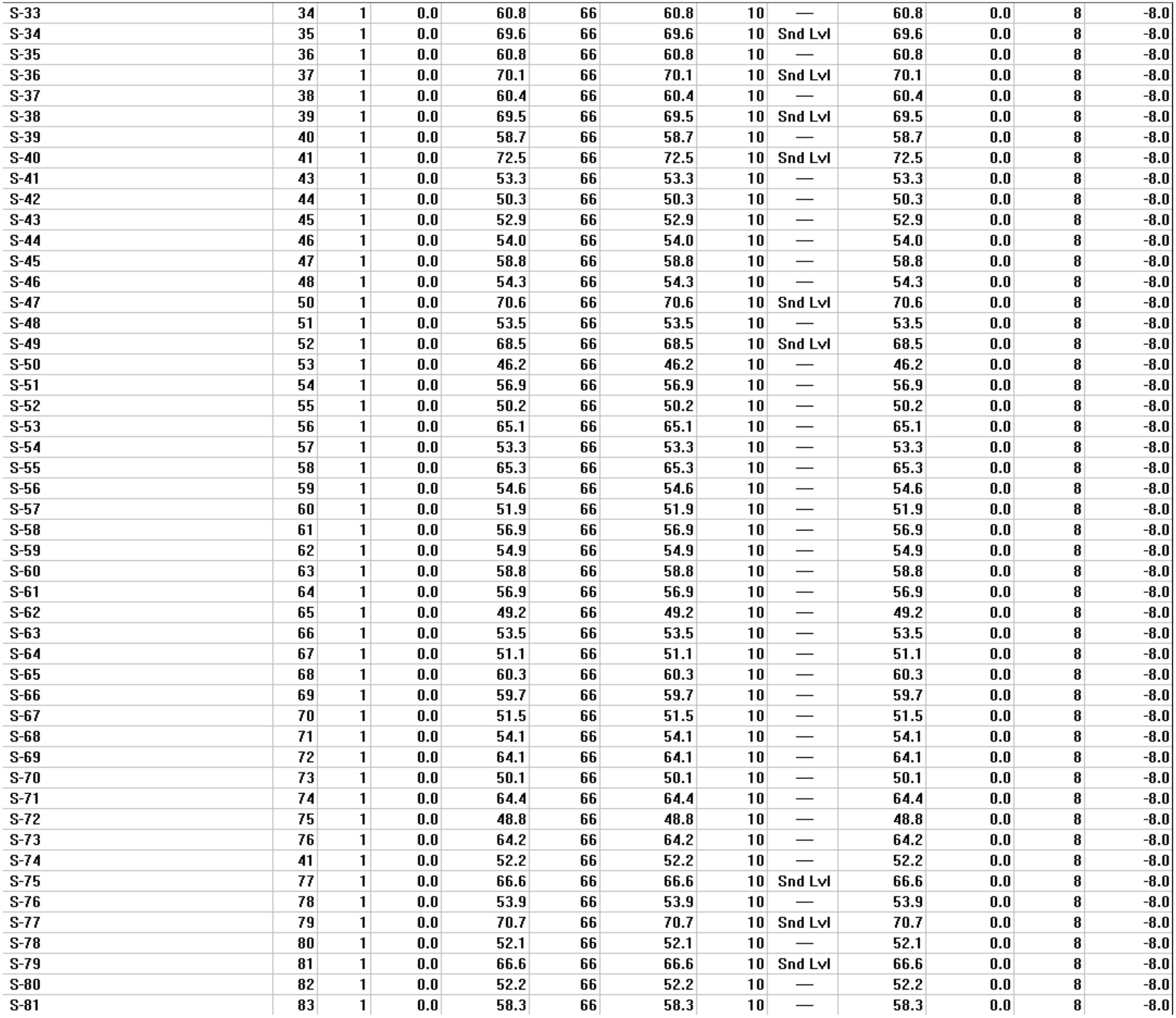
22 May 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Eisenhower Dr Extension
RUN: Alternative 1 Proposed PM
BARRIER DESIGN: INPUT HEIGHTS

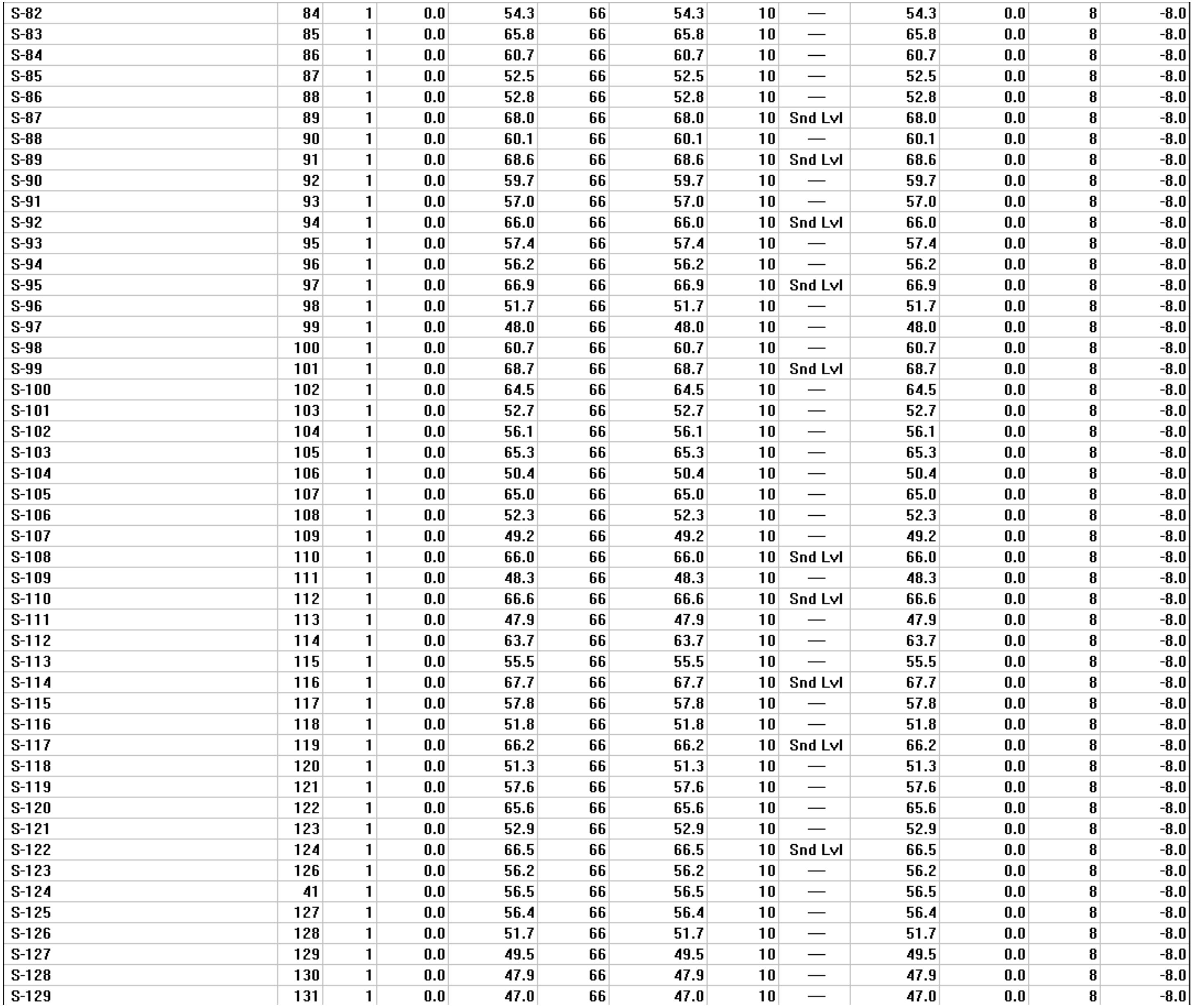
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

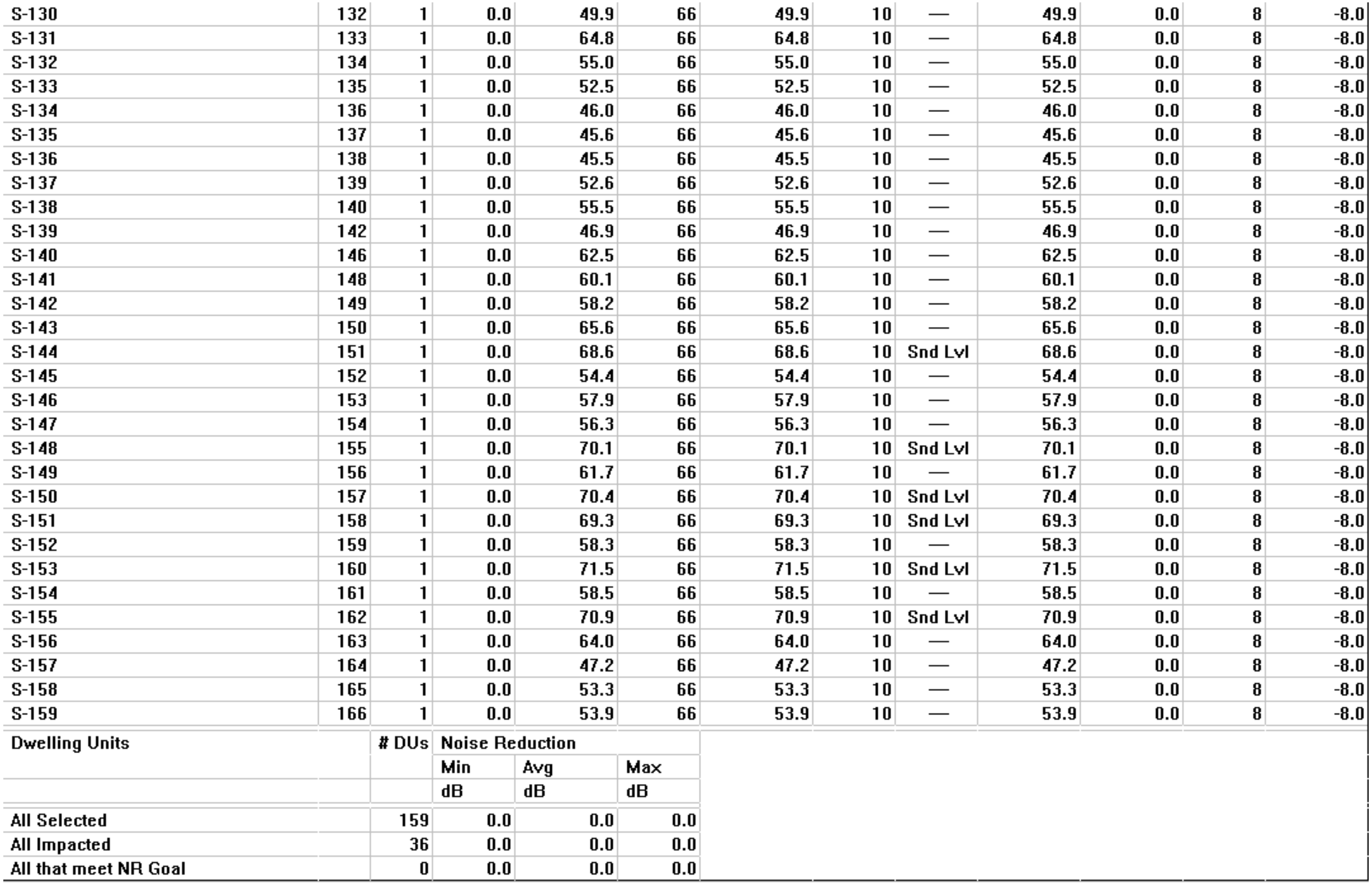
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
S-1	1	1	0.0	64.7	66	64.7	10	—	64.7	0.0	8	-8.0
S-2	2	1	0.0	58.9	66	58.9	10	—	58.9	0.0	8	-8.0
S-3	3	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
S-4	5	1	0.0	58.8	66	58.8	10	—	58.8	0.0	8	-8.0
S-5	6	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
S-6	7	1	0.0	69.7	66	69.7	10	Snd Lvl	69.7	0.0	8	-8.0
S-7	8	1	0.0	52.2	66	52.2	10	—	52.2	0.0	8	-8.0
S-8	9	1	0.0	57.7	66	57.7	10	—	57.7	0.0	8	-8.0
S-9	10	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
S-10	11	1	0.0	53.0	66	53.0	10	—	53.0	0.0	8	-8.0
S-11	12	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
S-12	13	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
S-13	14	1	0.0	51.5	66	51.5	10	—	51.5	0.0	8	-8.0
S-14	15	1	0.0	65.3	66	65.3	10	—	65.3	0.0	8	-8.0
S-15	16	1	0.0	52.0	66	52.0	10	—	52.0	0.0	8	-8.0
S-16	17	1	0.0	60.5	66	60.5	10	—	60.5	0.0	8	-8.0
S-17	18	1	0.0	64.9	66	64.9	10	—	64.9	0.0	8	-8.0
S-18	19	1	0.0	51.4	66	51.4	10	—	51.4	0.0	8	-8.0
S-19	20	1	0.0	50.7	66	50.7	10	—	50.7	0.0	8	-8.0
S-20	21	1	0.0	61.7	66	61.7	10	—	61.7	0.0	8	-8.0
S-21	22	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
S-22	23	1	0.0	61.1	66	61.1	10	—	61.1	0.0	8	-8.0
S-23	24	1	0.0	55.5	66	55.5	10	—	55.5	0.0	8	-8.0
S-24	25	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
S-25	26	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
S-26	27	1	0.0	59.7	66	59.7	10	—	59.7	0.0	8	-8.0
S-27	28	1	0.0	52.7	66	52.7	10	—	52.7	0.0	8	-8.0
S-28	29	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
S-29	30	1	0.0	58.4	66	58.4	10	—	58.4	0.0	8	-8.0
S-30	31	1	0.0	53.9	66	53.9	10	—	53.9	0.0	8	-8.0
S-31	32	1	0.0	65.4	66	65.4	10	—	65.4	0.0	8	-8.0



S-33	34	1	0.0	60.8	66	60.8	10	—	60.8	0.0	8	-8.0
S-34	35	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
S-35	36	1	0.0	60.8	66	60.8	10	—	60.8	0.0	8	-8.0
S-36	37	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
S-37	38	1	0.0	60.4	66	60.4	10	—	60.4	0.0	8	-8.0
S-38	39	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
S-39	40	1	0.0	58.7	66	58.7	10	—	58.7	0.0	8	-8.0
S-40	41	1	0.0	72.5	66	72.5	10	Snd Lvl	72.5	0.0	8	-8.0
S-41	43	1	0.0	53.3	66	53.3	10	—	53.3	0.0	8	-8.0
S-42	44	1	0.0	50.3	66	50.3	10	—	50.3	0.0	8	-8.0
S-43	45	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	-8.0
S-44	46	1	0.0	54.0	66	54.0	10	—	54.0	0.0	8	-8.0
S-45	47	1	0.0	58.8	66	58.8	10	—	58.8	0.0	8	-8.0
S-46	48	1	0.0	54.3	66	54.3	10	—	54.3	0.0	8	-8.0
S-47	50	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
S-48	51	1	0.0	53.5	66	53.5	10	—	53.5	0.0	8	-8.0
S-49	52	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	8	-8.0
S-50	53	1	0.0	46.2	66	46.2	10	—	46.2	0.0	8	-8.0
S-51	54	1	0.0	56.9	66	56.9	10	—	56.9	0.0	8	-8.0
S-52	55	1	0.0	50.2	66	50.2	10	—	50.2	0.0	8	-8.0
S-53	56	1	0.0	65.1	66	65.1	10	—	65.1	0.0	8	-8.0
S-54	57	1	0.0	53.3	66	53.3	10	—	53.3	0.0	8	-8.0
S-55	58	1	0.0	65.3	66	65.3	10	—	65.3	0.0	8	-8.0
S-56	59	1	0.0	54.6	66	54.6	10	—	54.6	0.0	8	-8.0
S-57	60	1	0.0	51.9	66	51.9	10	—	51.9	0.0	8	-8.0
S-58	61	1	0.0	56.9	66	56.9	10	—	56.9	0.0	8	-8.0
S-59	62	1	0.0	54.9	66	54.9	10	—	54.9	0.0	8	-8.0
S-60	63	1	0.0	58.8	66	58.8	10	—	58.8	0.0	8	-8.0
S-61	64	1	0.0	56.9	66	56.9	10	—	56.9	0.0	8	-8.0
S-62	65	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	-8.0
S-63	66	1	0.0	53.5	66	53.5	10	—	53.5	0.0	8	-8.0
S-64	67	1	0.0	51.1	66	51.1	10	—	51.1	0.0	8	-8.0
S-65	68	1	0.0	60.3	66	60.3	10	—	60.3	0.0	8	-8.0
S-66	69	1	0.0	59.7	66	59.7	10	—	59.7	0.0	8	-8.0
S-67	70	1	0.0	51.5	66	51.5	10	—	51.5	0.0	8	-8.0
S-68	71	1	0.0	54.1	66	54.1	10	—	54.1	0.0	8	-8.0
S-69	72	1	0.0	64.1	66	64.1	10	—	64.1	0.0	8	-8.0
S-70	73	1	0.0	50.1	66	50.1	10	—	50.1	0.0	8	-8.0
S-71	74	1	0.0	64.4	66	64.4	10	—	64.4	0.0	8	-8.0
S-72	75	1	0.0	48.8	66	48.8	10	—	48.8	0.0	8	-8.0
S-73	76	1	0.0	64.2	66	64.2	10	—	64.2	0.0	8	-8.0
S-74	41	1	0.0	52.2	66	52.2	10	—	52.2	0.0	8	-8.0
S-75	77	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
S-76	78	1	0.0	53.9	66	53.9	10	—	53.9	0.0	8	-8.0
S-77	79	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
S-78	80	1	0.0	52.1	66	52.1	10	—	52.1	0.0	8	-8.0
S-79	81	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
S-80	82	1	0.0	52.2	66	52.2	10	—	52.2	0.0	8	-8.0
S-81	83	1	0.0	58.3	66	58.3	10	—	58.3	0.0	8	-8.0



S-82	84	1	0.0	54.3	66	54.3	10	—	54.3	0.0	8	-8.0
S-83	85	1	0.0	65.8	66	65.8	10	—	65.8	0.0	8	-8.0
S-84	86	1	0.0	60.7	66	60.7	10	—	60.7	0.0	8	-8.0
S-85	87	1	0.0	52.5	66	52.5	10	—	52.5	0.0	8	-8.0
S-86	88	1	0.0	52.8	66	52.8	10	—	52.8	0.0	8	-8.0
S-87	89	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
S-88	90	1	0.0	60.1	66	60.1	10	—	60.1	0.0	8	-8.0
S-89	91	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
S-90	92	1	0.0	59.7	66	59.7	10	—	59.7	0.0	8	-8.0
S-91	93	1	0.0	57.0	66	57.0	10	—	57.0	0.0	8	-8.0
S-92	94	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
S-93	95	1	0.0	57.4	66	57.4	10	—	57.4	0.0	8	-8.0
S-94	96	1	0.0	56.2	66	56.2	10	—	56.2	0.0	8	-8.0
S-95	97	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
S-96	98	1	0.0	51.7	66	51.7	10	—	51.7	0.0	8	-8.0
S-97	99	1	0.0	48.0	66	48.0	10	—	48.0	0.0	8	-8.0
S-98	100	1	0.0	60.7	66	60.7	10	—	60.7	0.0	8	-8.0
S-99	101	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
S-100	102	1	0.0	64.5	66	64.5	10	—	64.5	0.0	8	-8.0
S-101	103	1	0.0	52.7	66	52.7	10	—	52.7	0.0	8	-8.0
S-102	104	1	0.0	56.1	66	56.1	10	—	56.1	0.0	8	-8.0
S-103	105	1	0.0	65.3	66	65.3	10	—	65.3	0.0	8	-8.0
S-104	106	1	0.0	50.4	66	50.4	10	—	50.4	0.0	8	-8.0
S-105	107	1	0.0	65.0	66	65.0	10	—	65.0	0.0	8	-8.0
S-106	108	1	0.0	52.3	66	52.3	10	—	52.3	0.0	8	-8.0
S-107	109	1	0.0	49.2	66	49.2	10	—	49.2	0.0	8	-8.0
S-108	110	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
S-109	111	1	0.0	48.3	66	48.3	10	—	48.3	0.0	8	-8.0
S-110	112	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
S-111	113	1	0.0	47.9	66	47.9	10	—	47.9	0.0	8	-8.0
S-112	114	1	0.0	63.7	66	63.7	10	—	63.7	0.0	8	-8.0
S-113	115	1	0.0	55.5	66	55.5	10	—	55.5	0.0	8	-8.0
S-114	116	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
S-115	117	1	0.0	57.8	66	57.8	10	—	57.8	0.0	8	-8.0
S-116	118	1	0.0	51.8	66	51.8	10	—	51.8	0.0	8	-8.0
S-117	119	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
S-118	120	1	0.0	51.3	66	51.3	10	—	51.3	0.0	8	-8.0
S-119	121	1	0.0	57.6	66	57.6	10	—	57.6	0.0	8	-8.0
S-120	122	1	0.0	65.6	66	65.6	10	—	65.6	0.0	8	-8.0
S-121	123	1	0.0	52.9	66	52.9	10	—	52.9	0.0	8	-8.0
S-122	124	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
S-123	126	1	0.0	56.2	66	56.2	10	—	56.2	0.0	8	-8.0
S-124	41	1	0.0	56.5	66	56.5	10	—	56.5	0.0	8	-8.0
S-125	127	1	0.0	56.4	66	56.4	10	—	56.4	0.0	8	-8.0
S-126	128	1	0.0	51.7	66	51.7	10	—	51.7	0.0	8	-8.0
S-127	129	1	0.0	49.5	66	49.5	10	—	49.5	0.0	8	-8.0
S-128	130	1	0.0	47.9	66	47.9	10	—	47.9	0.0	8	-8.0
S-129	131	1	0.0	47.0	66	47.0	10	—	47.0	0.0	8	-8.0



S-130	132	1	0.0	49.9	66	49.9	10	—	49.9	0.0	8	-8.0
S-131	133	1	0.0	64.8	66	64.8	10	—	64.8	0.0	8	-8.0
S-132	134	1	0.0	55.0	66	55.0	10	—	55.0	0.0	8	-8.0
S-133	135	1	0.0	52.5	66	52.5	10	—	52.5	0.0	8	-8.0
S-134	136	1	0.0	46.0	66	46.0	10	—	46.0	0.0	8	-8.0
S-135	137	1	0.0	45.6	66	45.6	10	—	45.6	0.0	8	-8.0
S-136	138	1	0.0	45.5	66	45.5	10	—	45.5	0.0	8	-8.0
S-137	139	1	0.0	52.6	66	52.6	10	—	52.6	0.0	8	-8.0
S-138	140	1	0.0	55.5	66	55.5	10	—	55.5	0.0	8	-8.0
S-139	142	1	0.0	46.9	66	46.9	10	—	46.9	0.0	8	-8.0
S-140	146	1	0.0	62.5	66	62.5	10	—	62.5	0.0	8	-8.0
S-141	148	1	0.0	60.1	66	60.1	10	—	60.1	0.0	8	-8.0
S-142	149	1	0.0	58.2	66	58.2	10	—	58.2	0.0	8	-8.0
S-143	150	1	0.0	65.6	66	65.6	10	—	65.6	0.0	8	-8.0
S-144	151	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
S-145	152	1	0.0	54.4	66	54.4	10	—	54.4	0.0	8	-8.0
S-146	153	1	0.0	57.9	66	57.9	10	—	57.9	0.0	8	-8.0
S-147	154	1	0.0	56.3	66	56.3	10	—	56.3	0.0	8	-8.0
S-148	155	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
S-149	156	1	0.0	61.7	66	61.7	10	—	61.7	0.0	8	-8.0
S-150	157	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
S-151	158	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
S-152	159	1	0.0	58.3	66	58.3	10	—	58.3	0.0	8	-8.0
S-153	160	1	0.0	71.5	66	71.5	10	Snd Lvl	71.5	0.0	8	-8.0
S-154	161	1	0.0	58.5	66	58.5	10	—	58.5	0.0	8	-8.0
S-155	162	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
S-156	163	1	0.0	64.0	66	64.0	10	—	64.0	0.0	8	-8.0
S-157	164	1	0.0	47.2	66	47.2	10	—	47.2	0.0	8	-8.0
S-158	165	1	0.0	53.3	66	53.3	10	—	53.3	0.0	8	-8.0
S-159	166	1	0.0	53.9	66	53.9	10	—	53.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	159	0.0	0.0	0.0
All Impacted	36	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix III

TRAINING CERTIFICATES
OF PREPARERS & REVIEWERS

Certificate of Continuing Education

This is to certify that

Crystalann Deardorff

has satisfactorily completed 32 hours of training on

FHWA Traffic Noise Model 2.5

and 14 hours of training on

Traffic Noise Fundamentals

conducted by

Bowlby & Associates, Inc.
Franklin, Tennessee
February 6 - 11, 2005

William Bowlby
William Bowlby, Ph.D., P.E.
Bowlby & Associates, Inc.

Roger L Wayson
Roger L. Wayson, Ph.D., P.E.
University of Central Florida

Certificate of Continuing Education

This is to certify that

Siobhan Kiernan

has satisfactorily completed 30 hours of training on

FHWA TRAFFIC NOISE MODEL 2.5

conducted by

Bowlby & Associates, Inc.

Franklin, Tennessee
September 27-30, 2016

William Bowlby, Ph.D., P.E.
Bowlby & Associates, Inc.

Darlene Reiter, Ph.D., P.E.
Bowlby & Associates, Inc.

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

NAMITA SINHA

has participated in

NHI Course No. FHWA-NHI-142063

Highway Traffic Noise: Basic Acoustics - WEB-BASED

hosted by

National Highway Institute

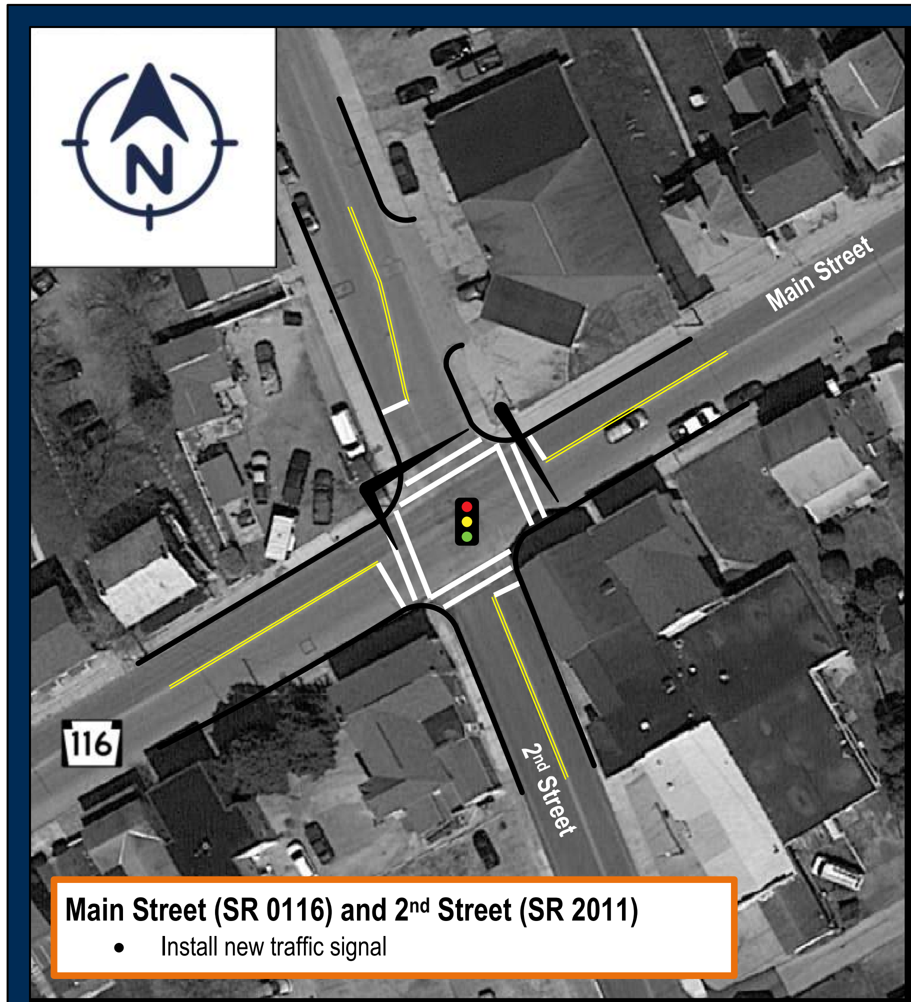
Location: *Web-Based Course*
Hours of Instruction: *2 hours*
Date: *2/19/2016*

Valerie Briggs

Valerie Briggs, Director
National Highway Institute

Appendix IV
TSM IMPROVEMENT FIGURES

Date: August 15, 2018

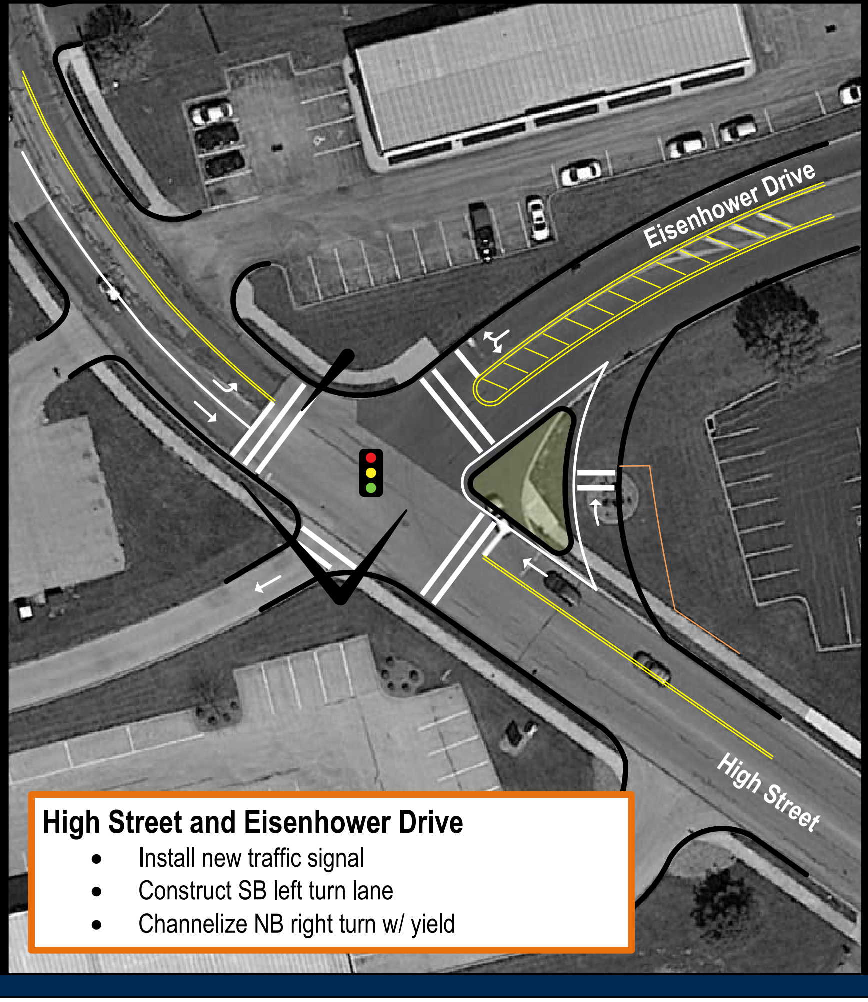


Main Street (SR 0116) and 2nd Street (SR 2011)
- Install new traffic signal

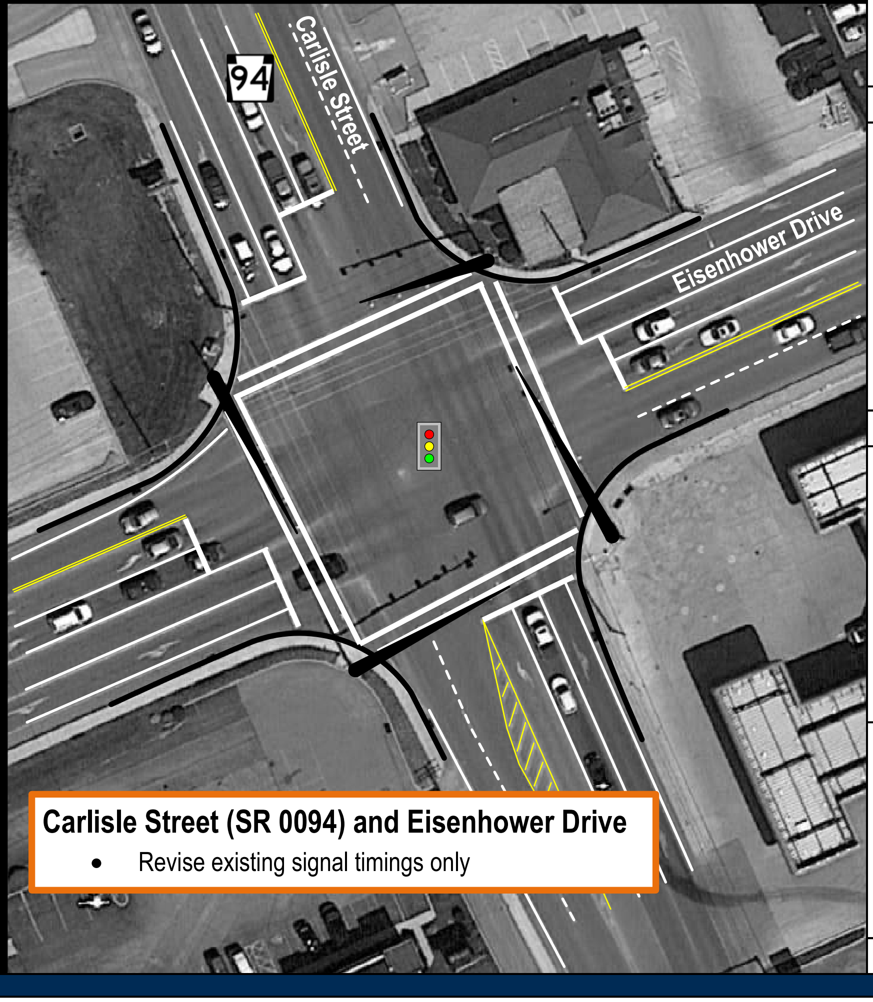
Main Street (SR 0116) and 5th Street
- Install new traffic signal

Oxford Avenue (SR 2008) and Kindig Lane
- Convert to all-way stop controlled

High Street and Kindig Lane
- Install new traffic signal



High Street and Eisenhower Drive
- Install new traffic signal
- Construct SB left turn lane
- Channelize NB right turn w/ yield



Carlisle Street (SR 0094) and Eisenhower Drive
- Revise existing signal timings only

Agreement: PennDOT / E00187

FIGURE 2A

TSM (2040)
RECOMMENDED IMPROVEMENTS

LOCAL OVERVIEW – INTERSECTIONS

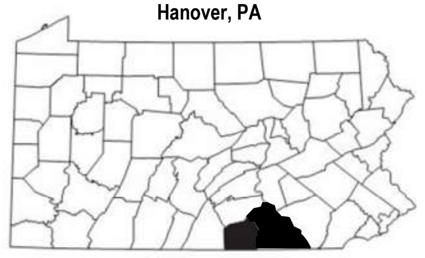
Hanover Area
Transportation Improvements

LEGEND

🚦	: Existing Traffic Signal
🚦	: New Traffic signal
STOP	: All-way Stop
—	: Outside edge of roadway
—	: Outside edge of sidewalk

REGIONAL SETTING

Hanover, PA



JMT Project Number: 02-0308-012

Date: August 15, 2018

Main Street (SR 0116) and Oxford Avenue (SR 2008)

- Construct additional EB through lane
- Construct additional WB through lane
- Construct EB left turn lane
- Construct WB left turn lane
- Construct SB left turn lane
- Reconstruct existing signal

Agreement: PennDOT / E00187

FIGURE 2B

TSM (2040)
RECOMMENDED IMPROVEMENTS

LOCAL OVERVIEW – CORRIDORS

ELM AVENUE (SR 0116/SR 2008)

Hanover Area
Transportation Improvements

LEGEND

🚦 : Existing Traffic Signal

🚦 : New Traffic signal

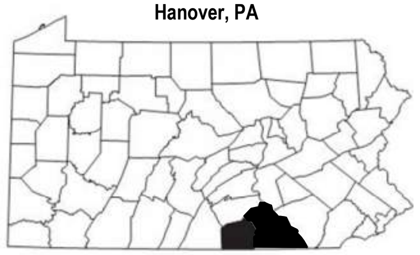
STOP : All-way Stop

— : Outside edge of roadway

— : Outside edge of sidewalk

REGIONAL SETTING

Hanover, PA



JMT Project Number: 02-0308-012

Date: August 15, 2018

Elm Avenue (SR 3098) and Carlisle Street (SR 0094)

- Construct additional NB through lane
- Construct additional SB through lane
- Reconstruct existing signal

Agreement: PennDOT / E00187

FIGURE 2C

TSM (2040) RECOMMENDED IMPROVEMENTS

LOCAL OVERVIEW – CORRIDOR

CARLISLE STREET (SR 0094)

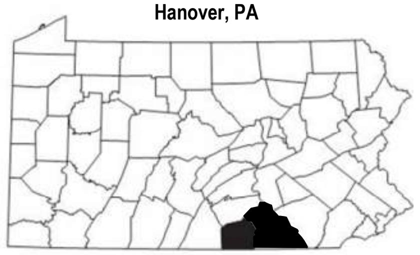
Hanover Area Transportation Improvements

LEGEND

🚦 : Existing Traffic Signal
🚦 : New Traffic signal
STOP : All-way Stop
— : Outside edge of roadway
— : Outside edge of sidewalk

REGIONAL SETTING

Hanover, PA



JMT Project Number: 02-0308-012

Date: August 15, 2018

Elm Avenue (SR 3098) and Carlisle Street (SR 0094)

- Construct additional NB through lane
- Construct additional SB through lane
- Reconstruct existing signal

Agreement: PennDOT / E00187

FIGURE 2D

TSM (2040) RECOMMENDED IMPROVEMENTS

LOCAL OVERVIEW – CORRIDOR

CARLISLE STREET (SR 0094)

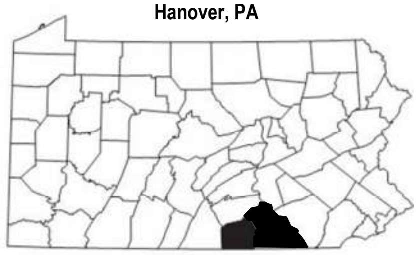
Hanover Area Transportation Improvements

LEGEND

🚦 : Existing Traffic Signal
🚦 : New Traffic signal
STOP : All-way Stop
— : Outside edge of roadway
— : Outside edge of sidewalk

REGIONAL SETTING

Hanover, PA



JMT Project Number: 02-0308-012