

**AGREEMENT NO. E03975  
MPMS NO. 108952**

**SR 4034, SECTION A01 (BAYFRONT PARKWAY)  
CENTRAL CORRIDOR IMPROVEMENTS  
CITY OF ERIE, ERIE COUNTY, PA**

**Preliminary Design Traffic Noise Report**

*PREPARED FOR*



**DISTRICT 1-0**

*PREPARED BY*



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**February 2020**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Table of Contents

	<b>Executive Summary</b>	<b>1</b>
<b>1.</b>	<b>Introduction</b>	<b>2</b>
<b>2.</b>	<b>Noise Study Areas</b>	<b>3</b>
<b>3.</b>	<b>Purpose</b>	<b>4</b>
<b>4.</b>	<b>Regulations and Guidance</b>	<b>4</b>
<b>5.</b>	<b>Methodology</b>	<b>5</b>
<b>6.</b>	<b>TNM Model Validation</b>	<b>8</b>
<b>7.</b>	<b>Noise Modeling</b>	<b>8</b>
<b>8.</b>	<b>Traffic Noise Abatement</b>	<b>21</b>
<b>9.</b>	<b>Construction Noise</b>	<b>21</b>
<b>10.</b>	<b>Conclusions</b>	<b>21</b>
<b>11.</b>	<b>Public Involvement</b>	<b>25</b>

#### Figures

<b>Appendix 1</b>	<b>Short-term Noise Monitoring Data</b>
<b>Appendix 2</b>	<b>Traffic Data</b>
<b>Appendix 3</b>	<b>TNM Validation Models</b>
<b>Appendix 4</b>	<b>TNM Existing Conditions Models</b>
<b>Appendix 5</b>	<b>TNM No-Build Models</b>
<b>Appendix 6</b>	<b>TNM Build Models</b>

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Executive Summary

The proposed Bayfront Parkway Improvement project is intended to improve the pedestrian, bicycle, transit, and passenger vehicle connections between downtown Erie, existing neighborhoods, and Lake Erie waterfront properties. It is also intended to reduce crashes on the Bayfront Parkway (SR 4034), reduce future congestion, and improve traffic operations and efficiency. The study area for this Preliminary Design Traffic Noise Report covers about 1.5 miles of existing Bayfront Parkway (SR 4034) in the City of Erie, Erie County, Pennsylvania. This Preliminary Design Traffic Noise Report presents the results of a traffic noise analysis using the current project plans and procedures contained in *PennDOT Publication No. 24 (Project Level Traffic Noise Handbook)* issued May 2019.

The study area was divided into eight Noise Study Areas (NSAs) based upon existing land use patterns and topography. An Ambient Noise Monitoring work plan was approved by PennDOT prior to any traffic noise monitoring activity. The work plan included a discussion of noise monitoring procedures, a map of the eleven monitoring locations, and an explanation of site access procedures. Ambient noise monitoring was conducted in November 2019, during weather conditions suitable for outdoor activity. FHWA's Traffic Noise Model (TNM Version 2.5) computer program was used to predict the existing and design year (2040) noise levels generated by traffic on the existing and proposed Bayfront Parkway and other local roads associated with the build alternative. To verify the accuracy of TNM 2.5, traffic noise levels were predicted for multiple monitoring sites and compared to the on-site monitoring results. The findings showed that TNM 2.5 was accurately predicting noise levels as required by *PennDOT Publication No. 24*.

The TNM 2.5 analysis of existing and design year (2040) traffic noise used roadway location and elevation data from project plans, profiles, and cross-sections available in late 2019. Receiver locations and elevations were developed from project plans and recent aerial photography. The TNM models used traffic data from project specific traffic forecasts. Existing year and design year no-build analysis involved 2018/2040 traffic traveling at the observed speeds or posted speed limits. The design year build analysis involved 2040 traffic traveling at a maximum of 35 mph on proposed Bayfront Parkway and observed speeds or posted speed limits on other local roads.

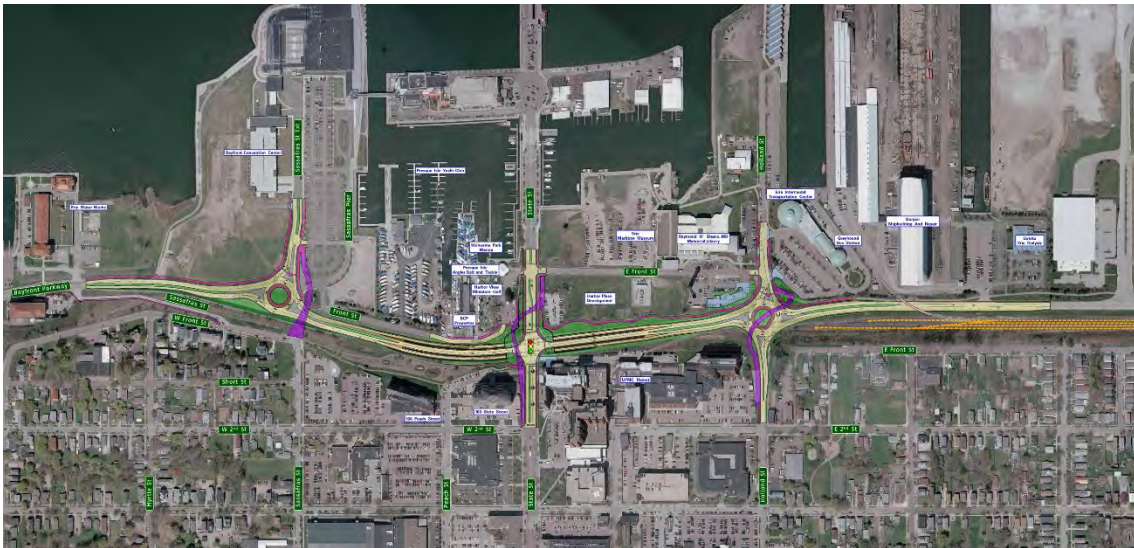
The TNM 2.5 analysis found that no receivers in the study area would approach or exceed FHWA Noise Abatement Criteria in the design year (2040) with either the no-build or build alternative. Also, no receivers were predicted to have a substantial increase in traffic noise levels as a result of the build alternative. Therefore, **the project has no traffic noise impacts** according to *PennDOT Publication No. 24*. Because the project has no traffic noise impacts, the investigation of traffic noise abatement was not warranted and noise mitigation, using noise walls, was not evaluated.

Project specific construction-related noise levels have not been predicted for the Bayfront Parkway Improvements project. It can be assumed that all developed land uses and activities adjacent to the proposed project will be temporarily affected by noise generated from power equipment used for highway construction.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### 1. Introduction

The proposed Bayfront Parkway Improvement project is intended to improve the pedestrian, bicycle, transit, and passenger vehicle connections between downtown Erie, existing neighborhoods, and Lake Erie waterfront properties. It is also intended to reduce crashes on the Bayfront Parkway (SR 4034), reduce future congestion, and improve traffic operations and efficiency. As shown below, the project involves a grade-separated intersection between State Street and Bayfront Parkway, which includes a single eastbound and a single westbound bypass lane that travels under State Street. A two-lane bi-directional roadway with one eastbound lane and one westbound lane will be constructed on ramp structures on the east and west sides of the grade-separated structure that carries local traffic to State Street. In addition, the project proposes roundabouts along the Bayfront Parkway at Sassafra Street and Holland Street. The project also proposes the construction of additional shared-use trail connections between neighborhoods, downtown, and the waterfront.



As part of the Bayfront Parkway Improvements project, the existing railroad track located between Sassafra Street Extension and Holland Street will be removed to accommodate the proposed improvements. In order to maintain operations, CSX is proposing to add additional track east of Holland Street and adjacent to the Pennsylvania Soldiers' and Sailors' Home and the Veterans Memorial Cemetery. Currently, an at-grade railroad crossing exists between the Soldiers' and Sailors' Home and the Veterans Memorial Cemetery. Also part of the Bayfront Parkway Improvements project, this crossing will be eliminated and a multi-modal bridge over the proposed CSX tracks will be constructed just west of the existing crossing.

The study area for this Preliminary Design Traffic Noise Report covers about 1.5 miles of existing Bayfront Parkway (SR 4034) in the City of Erie, Erie County, Pennsylvania. See Figure 1. This Preliminary Design Traffic Noise Report presents the results of a traffic noise analysis using the current project plans and procedures contained in *PennDOT Publication No. 24 (Project Level Traffic Noise Handbook)* issued May 2019.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### 2. Noise Study Areas

The project area has been divided into eight Noise Study Areas (NSAs) based upon existing land use patterns and topography. See Figure 2.

#### NSA A

NSA A is located along W Front Street from Chestnut Street on the west to Sassafras Street to the east and south of Bayfront Parkway. NSA A contains primarily residential land uses, FHWA NAC Category B Receivers. However, it also includes Niagra Machine Inc. at 325 W Front Street, and Erie Water Works at 340 W Bayfront Parkway which are industrial and office land uses respectively, FHWA NAC Category E and F Receivers. See Figure 3a.



#### NSA B

NSA B is located south of W Bayfront Parkway from Sassafras Street on the west to State Street to the east. It contains two multi-story office buildings which are commercial land uses and have no outdoor activity areas. See Figure 3b.

#### NSA C

NSA C is located south of E Bayfront Parkway from State Street on the west to Holland Street to the east. It contains the UPMC Hamot Campus which is a hospital complex, and therefore FHWA NAC Category C or Category D land use. See Figure 3c.



#### NSA D

NSA D is located south of E Bayfront Parkway from Holland Street on the west to Wallace Street to the east. NSA D contains primarily residential land uses, FHWA NAC Category B Receivers, however it also includes a small office complex near the corner of 2<sup>nd</sup> Street and Holland Street, the Russian Old Rite Orthodox Church of the Nativity at 247 E 1<sup>st</sup> Street, a commercial building at the corner of E 1<sup>st</sup> Street and German Street, and a park at the corner of E 1<sup>st</sup> Street and Wallace Street. See Figure 3d.

#### NSA E

NSA E is located north of W Bayfront Parkway from just east of Sassafras Street on the west to State Street to the east. It contains commercial and industrial land uses including the Presque Isle Yacht Club, Bayshore Marine Services, Harborview Miniature Golf and Presque Isle Bait and Tackle, which are considered FHWA NAC Category E receivers. See Figure 3e.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA F

NSA F is located north of E Bayfront Parkway from State Street on the west to Holland Street to the east. It contains commercial and institutional land uses including a Hampton Inn (currently under construction), the Erie Maritime Museum, Erie County Planning, and Raymond M Blasco Memorial Library. The Hampton Inn is an FHWA NAC Category E land use. The Erie Maritime Museum, Erie County Planning, and Raymond M Blasco Memorial Library, are Category C or Category D land uses. See Figure 3f.



### NSA G

NSA G is located north of E Bayfront Parkway from Holland Street on the west to the railroad tracks west of the Erie Water Treatment Plant to the east. It contains commercial and industrial land uses including the Erie Greyhound Bus Station, Donjon Shipbuilding and Repair, DaVita Erie Dialysis, eCycle Group, and Sunburst Electronics, which are FHWA NAC Category F land uses. See Figure 3g.

### NSA H

NSA H is located south and west of E Bayfront Parkway at the east end of the project area. It contains institutional land uses including facilities surrounding the Pennsylvania Soldiers' and Sailors' Home. Those facilities include the Fort Presque Isle Blockhouse Memorial and Veterans Memorial Cemetery. The Pennsylvania Soldiers' and Sailors' Home itself is primarily a retirement facility with a Gazebo near the main entrance. See Figure 3h.



### 3. Purpose

The purpose of this Preliminary Design Traffic Noise Report is to document the existing noise levels and noise sources in the project area, compare the predicted future noise levels associated with the no-build alternative and the build alternative, identify any future noise impacts, and evaluate the possible mitigation of identified noise impacts.

### 4. Regulations and Guidance

**ms consultants, inc.** conducted this noise analysis according to the procedures contained in *PennDOT Publication No. 24 (Project Level Highway Traffic Noise Handbook)* issued May 2019.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### 5. Methodology

#### Noise Descriptors

Noise levels are described as an hourly A-weighted equivalent sound level in decibels, or dB(A) Leq(h). The decibel (dB) is a measure used to express the relative measure of a sound in comparison with a standard reference level. At the threshold of pain, the sound pressure is one million times greater than the sound pressure at the threshold of hearing. The decibel scale is used to logarithmically compress this large range of numeric values. By using the decibel scale, the range of sounds can be expressed as 0 to 120 dB rather than 1 to 1,000,000. In general, the average person cannot detect an increase or decrease in noise (sound pressure) level of less than 3 dB(A). A change in noise level of 5 dB(A) is readily perceptible by most people. An increase or decrease in noise level of 10 dB(A) is perceived as a doubling or halving of the noise level.

Sound frequency is expressed as cycles per second or Hertz (Hz). The human ear can detect a wide range of frequencies from 20 to 20,000 Hz, but is most sensitive to sounds over a frequency range of 200 to 5,000 Hz. The human ear does not respond in a uniform manner to different frequency sounds. A sound pressure level of 70 dB will be perceived as much louder at 1,000 Hz than at 100 Hz. To account for this, various weighting methods have been developed to reflect human sensitivity to noise. The purpose of a weighting method is to de-emphasize the frequency ranges in which the human ear is less sensitive. The most commonly used measure of noise level is the A-weighted sound level (dB(A)). The dB(A) sound level is widely used for transportation-related noise measurements and specifications for community noise ordinances and standards. The dB(A) has been shown to be highly correlated to human response to noise.

In addition to noise fluctuating in frequency, environmental noise will fluctuate in intensity from moment to moment. Over a period of time there will be quiet moments and peak levels resulting from noisy, identifiable sources (trucks, aircraft, etc.). Because of these fluctuations, it is common practice to average these noise level fluctuations over a specified period of time. The equivalent sound level over a given period of interest, Leq, is equal to the equivalent steady-state noise level which, in a stated time period, would contain the same acoustical energy as the time-varying noise levels that actually occurred during the same time period. The hourly value of Leq, based upon the peak-hour percentage of the annual average daily traffic, is referred to as Leq(h). Surveys have shown that Leq properly predicts annoyance, and this descriptor is commonly used for noise measurement, prediction, and impact assessment.

#### Noise Monitoring

An Ambient Noise Monitoring work plan was prepared by **ms consultants, inc.** and approved by PennDOT on November 7, 2019, prior to any traffic noise monitoring activity on private property. The work plan included a discussion of noise monitoring procedures, a map of short-term (15-minute) monitoring locations, and an explanation of site access procedures.

RION NL-31 Sound Level Meters and Metrosonics db-3100 sound analyzers (dosimeters) were utilized to obtain existing traffic noise levels. Standardized field data sheets for existing condition documentation were also completed at the noise monitoring sites.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

Short-term ambient noise monitoring was conducted in November 2019, during weather conditions suitable for outdoor activity. Each site was monitored for a period of at least 15 minutes. Weather conditions and noise sources were noted at each site (See Appendix 1). During short-term traffic noise monitoring, traffic counts on Bayfront Parkway, State Street, Holland Street and several other crossroads were conducted using video replay and manual methods. Observed travel speed was determined by visual observation and by driving Bayfront Parkway in each direction.

### Noise Level Prediction

FHWA's Traffic Noise Model (Version 2.5) computer program was used to predict the Existing and Design Year (2040) noise levels generated by traffic on the proposed Bayfront Parkway, intersections and the other local roads associated with the build alternative. Roadway location and elevation data was determined from project plans, profiles, and cross-sections available in late 2019. Receiver locations and elevations were developed from project plans and recent aerial photography.

The Existing Year conditions, Design Year no-build, and Design Year build TNM models used traffic data that was developed from traffic forecasts prepared specifically for the project (See Appendix 2). Observed traffic was used only for TNM model validation. Existing year and design year no-build analysis involved 2018/2040 traffic traveling at the observed speeds or posted speed limits. The design year build analysis involved 2040 traffic traveling at a maximum of 35 mph on proposed Bayfront Parkway and observed speeds or posted speed limits on other local roads. TNM Traffic Control Devices, software settings, were used to appropriately replicate stop-and-go traffic at the proposed intersections and slow-moving traffic accelerating away from the proposed roundabouts.

### Undeveloped Lands

PennDOT *Publication No. 24* explains that in order to assist local planning officials, the distance to impact thresholds for the various FHWA land use activity categories should be determined in undeveloped areas. The Bayfront Parkway Improvements project area, located between downtown Erie and the Lake Erie waterfront, has been developed for many years. Therefore, no undeveloped lands noise analysis has been conducted.

It is understood that the project area contains areas that were previously developed, are currently vacant, and are being considered for future waterfront redevelopment. However, there are no final approved permits for this redevelopment, so these areas were not included in this noise analysis.



## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Noise Impact Assessment

According to PennDOT *Publication No. 24*, a project is defined as having a traffic noise impact if either of the following conditions occur:

1. Predicted noise levels for the design year approach or exceed the FHWA Noise Abatement Criteria (NAC) as presented in Table 1.
2. Predicted noise levels are a substantial increase over the existing noise levels. According to PennDOT *Publication No. 24*, a substantial increase occurs where the design year noise level increases 10 dB(A) or more above the existing noise level.

<b>Table 1</b> <b>Noise Abatement Criteria (23 CFR 772)</b> <b>Hourly Weighted Sound Levels dB(A) For Various Land Use Activity Categories</b>		
Land Use Activity Category	Leq(h)*	Description of Land Use Activity Category
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B**	67 (exterior)	Residential.
C**	67 (exterior)	Active sports areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E**	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A, B, or C.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities, (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.
* Impact thresholds should not be used as design standards for noise abatement purposes.		
** Includes undeveloped lands permitted for this activity category.		

**Because no receivers had predicted noise levels for the Design Year 2040 that approached or exceeded FHWA Noise Abatement Criteria and no receivers had a predicted Design Year 2040 noise level that were substantial increases, no traffic noise impacts were identified with the Build Alternative. Therefore, traffic noise abatement was not warranted and noise mitigation was not evaluated according the guidance contained in *PennDOT Publication No. 24*.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### 6. TNM Model Validation

To verify the accuracy of TNM 2.5, existing traffic noise levels were predicted for the monitoring sites and compared to monitoring results. This was accomplished by developing a TNM model of the existing roadways including the traffic volume, average vehicular speed, and number of trucks observed during the monitoring period. As shown in Table 2, the difference in the two values was within +/- 3 dB(A) indicating the model was within the level of accuracy required by PennDOT *Publication No. 24* (See Appendix 3).



<b>Table 2 Model Validation Results - dB(A)</b>			
Location	Monitored Noise Level	Predicted Noise Level	Difference
Site A-1	49.0	49.5	0.5
Site A-1ii	48.0	47.4	-0.6
Site B-1	66.1	66.0	-0.1
Site C-1	64.9	64.3	-0.6
Site D-1	55.3	55.7	0.4
Site D-2	56.9	56.0	-0.9
Site E-1	55.9	56.7	0.8
Site F-1*	60.1	57.3	-2.8
Site F-2	57.1	58.1	1.0
Site H-1	56.5	57.0	0.5
Site H-2**	52.0	n/a	n/a

\* Site F-1 monitored level elevated due to hotel construction activity.

\*\* Site H-2 had no discernable traffic noise (see Figure 2).

### 7. Noise Modeling

Because TNM was predicting existing noise levels accurately, similar models were developed to predict existing peak-hour noise levels in each NSA. Because the highest design year traffic volumes are associated with the PM peak-hour, PM peak-hour traffic volumes were used throughout this study including the existing and predicted future traffic on Bayfront Parkway and other roadways. Appendix 4 contains the TNM output from the existing conditions model. This modeled existing noise level was later used as the existing noise level in future no-build and build models.

TNM 2.5 was also used to predict Design Year (2040) traffic noise levels associated with the no-build and build alternatives. Design Year traffic noise was predicted for a total of 171 receiver sites (See Figure 3a thru Figure 3h). These modeling sites represent numerous residential sites, a

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

church, and a shared-use trail, all of which are located adjacent to the proposed Bayfront Parkway, and the other local roads associated with the project.

- TNM 2.5 output for the no-build alternative is presented in Appendix 5.
- TNM 2.5 output for the build alternative is in Appendix 6.

### NSA A

NSA A is located along W Front Street from Chestnut Street on the west to Sassafras Street to the east and south of Bayfront Parkway. NSA A contains primarily residential land uses, FHWA NAC Category B Receivers, however also includes Niagra Machine Inc. (not modeled), and Erie Water Works (A-4), which are industrial and office land uses respectively, FHWA NAC Category F and E Receivers.

<b>Table 3</b>						
<b>NSA A - Predicted Noise Levels dB(A)</b>						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative – 2040	
			Predicted	Increase	Predicted	Increase
A-4 (Office)	E	66	66	0	66	0
A-9	B	47	48	1	48	1
A-10	B	47	48	1	48	1
A-12	B	46	48	2	48	2
A-13	B	47	48	1	49	2
A-14	B	49	50	1	51	2
A-15	B	50	51	1	51	1
A-16	B	49	51	2	51	2
A-17	B	50	51	1	51	1
A-18	B	50	52	2	51	1
A-19	B	51	53	2	53	2
A-20	B	51	53	2	54	3
A-21	B	52	53	1	54	2
A-22	B	52	53	1	54	2
A-23	B	52	53	1	53	1
A-24	B	53	54	1	54	1
A-27	B	54	55	1	55	1
A-2ii	B	45	46	1	47	2
A-1iii	B	41	42	1	41	0
A-2iii	B	40	42	2	41	1
A-3ii	B	45	46	1	47	2
A-4ii	B	45	47	2	47	2

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

Table 3 NSA A - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
A-4iii	B	40	42	2	41	1
A-5iii	B	41	42	1	41	0
A-6iii	B	41	42	1	41	0
A-7iii	B	40	42	2	41	1
A-8iii	B	40	42	2	41	1
A-9iii	B	40	41	1	40	0
A-10iii	B	41	42	1	41	0
A-11iii	B	41	43	2	41	0
A-13ii	B	42	44	2	44	2
A-13iii	B	42	43	1	43	1
A-13iv	B	40	41	1	41	1
A-13v	B	42	44	2	42	0
A-13vi	B	42	43	1	41	-1
A-14ii	B	44	46	2	47	3
A-14iii	B	44	45	1	46	2
A-14iv	B	43	44	1	45	2
A-14v	B	42	44	2	44	2
A-14vi	B	42	43	1	43	1
A-14vii	B	42	43	1	42	0
A-15ii	B	45	46	1	45	0
A-15iii	B	42	44	2	42	0
A-16ii	B	45	46	1	45	0
A-17ii	B	45	46	1	45	0
A-18ii	B	45	47	2	45	0
A-18iii	B	43	44	1	42	-1
A-19ii	B	46	47	1	45	-1
A-19iii	B	43	44	1	43	0
A-20ii	B	46	48	2	45	-1
A-21ii	B	46	48	2	46	0
A-21iii	B	44	45	1	43	-1
A-22ii	B	46	48	2	46	0
A-23ii	B	47	48	1	46	-1
A-23iii	B	44	45	1	44	0
A-24ii	B	47	49	2	47	0

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

Table 3 NSA A - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative – 2040	
			Predicted	Increase	Predicted	Increase
A-24iii	B	45	46	1	44	-1
A-25ii	B	48	49	1	48	0
A-25iii	B	46	47	1	45	-1
A-26iii	B	46	47	1	46	0
A-27ii	B	49	51	2	49	0
A-27iii	B	47	48	1	46	-1
A-28iii	B	47	48	1	47	-1

As shown in Table 3, predicted No-Build Alternative Year 2040 peak-hour noise levels in NSA A do not approach or exceed FHWA NAC for Activity Category B land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA A also do not approach or exceed FHWA NAC for Activity Category B land uses. The Build Alternative noise levels also do not increase 10 dB(A) or more above the existing noise levels and are not considered a substantial increase.

At some receivers in NSA A, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway and the reduction of acceleration/deceleration related noise due to the proposed roundabout replacing the existing intersection at Sassafras Street Extension.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for the Build Alternative Year 2040 and are not considered a substantial increase, NSA A is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA B

NSA B is located south of W Bayfront Parkway from Sassafras Street on the west to State Street to the east. It contains two multi-story office buildings which are commercial land uses. There is also a shared-use trail adjacent to W Bayfront Parkway. The four receivers below represent points along the shared-use trail which are considered Activity Category C receivers.

Table 4 NSA B - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
B-1	C	61	62	1	61	0
B-2	C	56	57	1	56	0
B-3	C	60	61	1	60	0
B-4	C	64	65	1	64	0

As shown in Table 4, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for Activity Category C land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA B also do not approach or exceed FHWA NAC for Activity Category C land uses. The Build Alternative noise levels also do not increase 10 dB(A) or more above the existing noise levels and are not considered a substantial increase.

The predicted traffic noise levels in NSA B did not increase with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for the Build Alternative Year 2040 and are not considered a substantial increase, NSA B is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA C

NSA C is located south of E Bayfront Parkway from State Street on the west to Holland Street to the east. It contains the UPMC Hamot Campus which is a hospital complex, which is an FHWA NAC Category C or Category D land use.

Table 5 NSA C - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
C-1	C or D	51	53	2	51	0
C-2	C or D	61	62	1	60	-1

As shown in Table 5, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for Activity Category C land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA B also do not approach or exceed FHWA NAC for Activity Category C and also do not increase 10 dB(A) or more above the existing noise level and therefore are not considered a substantial increase. At receiver C-2, predicted traffic noise decreased with the Build Alternative due to proposed decreases in speed limit, minimization of acceleration noise because of the removed signal and roundabout construction at Holland Street, and shielding due to the proposed depressed roadway at State Street.

The predicted traffic noise levels in NSA C did not increase or decreased slightly with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

Field review confirmed that there are no outdoor activity areas facing Bayfront Parkway at the UPMC Hamot Campus (See Figure 03c). Therefore, FHWA NAC is Activity Category D (interior) is also applicable. Because the hospital buildings are of modern masonry construction, according to FHWA guidance they can be assumed to have at least a 25 dB difference between exterior and interior levels. Therefore, the highest exterior noise level (Receiver C-2) equates to an interior noise level of 35 dBA, which is below the FHWA NAC of 51 dBA (See Table 1). As a result, the predicted interior traffic noise levels in NSA C cannot be considered an impact.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for the Build Alternative Year 2040 and are not considered a substantial increase, NSA C is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA D

NSA D is located south of E Bayfront Parkway from Holland Street on the west to Holland Street to Wallace Street to the east. NSA D contains primarily residential land uses, FHWA NAC Category B Receivers, however it also includes a small office complex (D-1iii, D-2iii), the Russian Old Rite Orthodox Church of the Nativity (D-6), a commercial building (D-8), and a park (D-28).

**Table 6  
NSA D - Predicted Noise Levels dB(A)**

Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
D-3	B	55	56	1	54	-1
D-4	B	54	55	1	54	0
D-5	B	53	54	1	53	0
D-6 (Church)	C	52	53	1	52	0
D-8 (Office)	E	49	50	1	49	0
D-9	B	56	57	1	56	0
D-10	B	55	55	0	55	0
D-11	B	57	57	0	56	-1
D-12	B	56	56	0	56	0
D-13	B	57	57	0	56	-1
D-14	B	57	58	1	57	0
D-15	B	55	56	1	54	-1
D-16	B	55	56	1	55	0
D-17	B	58	59	1	58	0
D-21	B	56	56	0	55	-1
D-22	B	55	55	0	54	-1
D-28 (Park)	C	52	52	0	51	-1
D-1iii (Office)	E	64	65	1	63	-1
D-2iii (Office)	E	53	54	1	53	0
D-3ii	B	51	52	1	51	0
D-3iii	B	50	51	1	50	0
D-3iva	B	51	52	1	51	0
D-3ivb	B	50	51	1	50	0
D-4ii	B	49	50	1	49	0
D-4iii	B	48	49	1	48	0
D-6iii	B	45	46	1	45	0
D-7ii	B	45	45	0	44	-1
D-8iii	B	44	44	0	43	-1
D-9iia	B	44	44	0	43	-1
D-9iib	B	43	44	1	43	0



## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

Table 6 NSA D - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
D-10iii	B	44	44	0	43	-1
D-11iia	B	44	44	0	43	-1
D-11iib	B	44	44	0	43	-1
D-12ii	B	46	47	1	45	-1
D-12iia	B	44	45	1	44	0
D-12iib	B	44	45	1	44	0
D-13ii	B	47	48	1	47	0
D-13iii	B	44	44	0	43	-1
D-15ii	B	52	53	1	51	-1
D-15iii	B	50	50	0	49	-1
D-15iv	B	49	49	0	48	-1
D-15v	B	46	47	1	46	0
D-15vi	B	45	46	1	45	0
D-15vii	B	44	45	1	44	0
D-15viii	B	44	44	0	43	-1
D-15ix	B	43	43	0	42	-1
D-15x	B	42	43	1	42	0
D-16ii	B	52	53	1	52	0
D-16iii	B	50	50	0	49	-1
D-16iv	B	48	49	1	48	0
D-16v	B	47	48	1	47	0
D-16vi	B	46	47	1	46	0
D-16vii	B	45	46	1	44	-1
D-16viii	B	44	45	1	44	0
D-16ix	B	43	44	1	43	0
D-16x	B	42	43	1	42	0
D-17iii	B	45	46	1	45	0
D-18iii	B	44	45	1	44	0
D-19iii	B	44	44	0	43	-1
D-20iii	B	44	44	0	43	-1
D-21ii	B	53	53	0	51	-2
D-21iii	B	51	51	0	49	-2
D-21iv	B	49	49	0	48	-1
D-21v	B	48	48	0	47	-1
D-21vi	B	47	47	0	46	-1

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

Table 6 NSA D - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
D-21vii	B	46	46	0	45	-1
D-21viii	B	45	46	1	45	0
D-21ix	B	45	45	0	44	-1
D-22ii	B	52	52	0	51	-1
D-22iii	B	50	50	0	49	-1
D-22iv	B	49	49	0	48	-1
D-22v	B	48	48	0	47	-1
D-22vi	B	47	47	0	46	-1
D-22vii	B	46	47	1	45	-1
D-22viii	B	45	46	1	45	0
D-22ix	B	44	45	1	44	0
D-23iii	B	46	47	1	46	0
D-24iii	B	46	47	1	45	-1
D-25iii	B	46	47	1	46	0
D-26iii	B	47	48	1	46	-1
D-27iii	B	47	48	1	46	-1
D-28iii	B	47	48	1	47	0
D-29iii	B	47	48	1	47	0
D-30iii	B	47	48	1	46	-1
D-31iii	B	48	48	0	47	-1

As shown in Table 6, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for their Activity Category therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA D are also not predicted to approach or exceed FHWA NAC for their Activity Category. Also, predicted Build Alternative noise levels do not increase 10 dB(A) or more above the existing noise level and are not considered a substantial increase.

At some receivers in NSA D, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway and the reduction of acceleration/deceleration related noise due to the proposed roundabout replacing the existing intersection at Holland Street.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for the Build Alternative Year 2040 and are not considered a substantial increase, NSA D is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA E

NSA E is located north of W Bayfront Parkway from just east of Sassafras Street on the west to State Street to the east. It contains commercial and industrial land uses including the Presque Isle Yacht Club (E-1iii), Bayshore Marine Services (E-2iii), Harborview Miniature Golf (E-3, E-3ii) and Presque Isle Bait and Tackle (E-3ii).

Table 7 NSA E - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative – 2040	
			Predicted	Increase	Predicted	Increase
E-1iii	E	53	55	2	58	5
E-2ii	E	52	54	2	53	1
E-3	E	57	60	3	51	-6
E-3ii	E	54	56	2	54	0

As shown in Table 7, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for Activity Category E land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA E also do not approach or exceed FHWA NAC for Activity Category E land uses. Also, predicted Build Alternative noise levels do not increase 10 dB(A) or more above the existing noise level and are not considered a substantial increase.

At some receivers in NSA E, predicted traffic noise levels did not increase or decreased with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for the Build Alternative Year 2040 and are not considered a substantial increase, NSA E is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA F

NSA F is located north of E Bayfront Parkway from State Street on the west to Holland Street to the east. It contains commercial and institutional land uses including a Hampton Inn (currently under construction), the Erie Maritime Museum (F-1), Erie County Planning, and Raymond M Blasco Memorial Library (F-2). The Hampton Inn (F-3) construction includes an adjacent parking lot. See Figure 3f.

Table 8 NSA F - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
F-1	C or D	56	56	0	54	-2
F-2	C or D	58	59	1	58	0
F-3	E	53	52	-1	54	1

As shown in Table 8, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for Activity Category C land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA F also do not approach or exceed FHWA NAC for Activity Category C land uses. Also, predicted Build Alternative noise levels do not increase 10 dB(A) or more above the existing noise level and are not considered a substantial increase.

At some receivers in NSA F, predicted traffic noise levels in NSA F did not increase or decreased slightly with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

The Erie Maritime Museum (F-1) and the Raymond M Blasco Memorial Library (F-2) can also be considered FHWA NAC Activity Category D (interior) receivers because they are public or non-profit institutional structures. Because the buildings are of modern masonry construction, according to FHWA guidance they can be assumed to have at least a 25 dB difference between exterior and interior levels. Therefore, the highest exterior noise level (Receiver F-2) equates to an interior noise level of 33 dBA, which is below the FHWA NAC of 51 dBA (See Table 1). As a result, the predicted interior traffic noise levels in NSA F cannot be considered an impact.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for the Build Alternative Year 2040 and are not considered a substantial increase, NSA F is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA G

NSA G is located north of E Bayfront Parkway from Holland Street on the west to the railroad tracks west of the Erie Water Treatment Plant to the east. It contains commercial and industrial land uses including the Erie Greyhound Bus Station (G-1, G-1iii), Donjon Shipbuilding and Repair (not modeled), DaVita Erie Dialysis (G-3), eCycle Group, and Sunburst Electronics (G-4). Receivers G-1, G-3, G-4, G-5 and G-1iii are considered Activity Category F land uses and therefore not considered noise sensitive. Receivers G-2iii and G-3iii appear to have an outdoor use area with picnic tables.

Table 9 NSA G - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative – 2040	
			Predicted	Increase	Predicted	Increase
G-1	F	58	59	1	56	-2
G-3	F	54	56	2	54	0
G-4	F	58	59	1	57	-1
G-5	F	55	56	1	54	-1
G-1iii	F	55	56	1	55	0
G-2iii	C	47	50	3	47	0
G-3iii	C	47	50	3	47	0

As shown in Table 9, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for Activity Category C land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels also do not approach or exceed FHWA NAC for Activity Category C land uses. Also, predicted Build Alternative Year 2040 noise levels do not increase 10 dB(A) or more above the existing noise level and are not considered a substantial increase.

At some receivers in NSA G, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway and the reduction of acceleration/deceleration related noise due to the proposed roundabout replacing the existing intersection at Holland Street.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for Activity Category C for the Build Alternative Year 2040 and are not considered a substantial increase, NSA G is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA H

NSA H is located south and west of E Bayfront Parkway at the east end of the project area. It contains institutional land uses including activities surrounding the Pennsylvania Soldiers' and Sailors' Home. It includes the Fort Presque Isle Blockhouse Memorial and a cemetery. The Pennsylvania Soldiers' and Sailors' Home itself is primarily a retirement facility with a Gazebo near the main entrance.

Table 10 NSA H - Predicted Noise Levels dB(A)						
Receiver	NAC Activity Category	Existing	No Build Alternative - 2040		Build Alternative - 2040	
			Predicted	Increase	Predicted	Increase
H-1	C	56	56	0	55	-1
H-2	C	50	50	0	50	0
H-3	C	53	53	0	53	0
H-1ii	C	39	40	1	39	0

**Note:** At receiver H-1, predicted traffic noise decreased with the Build Alternative due to proposed decreases in speed limit.

As shown in Table 10, predicted No-Build Alternative Year 2040 peak-hour noise levels do not approach or exceed FHWA NAC for Activity Category C land uses, therefore, there were no traffic noise impacts identified in the No-Build Alternative. The predicted Build Alternative Year 2040 peak-hour noise levels in NSA H also do not approach or exceed FHWA NAC for Activity Category C land uses. Also, predicted Build Alternative Year 2040 noise levels do not increase 10 dB(A) or more above the existing noise level and are not considered a substantial increase.

At some receivers in NSA H, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway.

**Because the noise levels do not approach or exceed FHWA NAC Criteria for Activity Category C for the Build Alternative Year 2040 and are not considered a substantial increase, NSA H is not predicted to have traffic noise impacts.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### 8. Traffic Noise Abatement

Because no receivers had predicted noise levels for the Design Year 2040 that approached or exceeded FHWA Noise Abatement Criteria and no receivers had a predicted Design Year 2040 noise level that were substantial increases, no traffic noise impacts were identified with the Build Alternative. Therefore, traffic noise abatement was not warranted and noise mitigation was not evaluated according to the guidance contained in PennDOT Publication No. 24.

### 9. Construction Noise

Project specific construction-related noise levels have not been predicted for the Bayfront Parkway Improvements project. However, it can be assumed that all developed land uses and activities adjacent to the proposed project will be temporarily affected by noise generated from power equipment used for highway construction. Such equipment may include, however is not limited to, front loaders, backhoes, bulldozers, trucks, tractors, scrapers, graders, pavers, roller compactors, slip-form equipment, concrete mixers, cranes, compressors, generators, pumps, jack hammers, pneumatic tools, saws, and vibrators. This equipment will operate intermittently and usually produces noise in the range of 70 - 98 dB(A) at a distance of approximately 50 feet.



### 10. Conclusions

#### NSA A

NSA A is located along W Front Street from Chestnut Street on the west to Sassafras Street to the east and south of Bayfront Parkway and contains primarily residential land uses with a couple of industrial and office land uses. Because predicted noise levels do not approach or exceed FHWA NAC Criteria with the Year 2040 Build Alternative and are not considered a substantial increase, NSA A is not predicted to have traffic noise impacts. At some receivers in NSA A, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway and the reduction of acceleration/deceleration related noise due to the proposed roundabout replacing the existing intersection.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA B

NSA B is located south of W Bayfront Parkway from Sassafras Street on the west to State Street to the east. It contains two multi-story office buildings which are commercial land uses. Because predicted noise levels do not approach or exceed FHWA NAC Criteria with the Year 2040 Build Alternative and are not considered a substantial increase, NSA B is not predicted to have traffic noise impacts.

The predicted traffic noise levels in NSA B did not increase with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

### NSA C

NSA C is located south of E Bayfront Parkway from State Street on the west to Holland Street to the east and contains the UPMC Hamot Campus which is a hospital complex. Because the predicted noise levels do not approach or exceed FHWA NAC Criteria for either Category C (exterior) or Category D (interior) with the Year 2040 Build Alternative and are not considered a substantial increase, NSA C is not predicted to have traffic noise impacts.

The predicted traffic noise levels in NSA C did not increase or decreased slightly with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

### NSA D

NSA D is located south of E Bayfront Parkway from Holland Street on the west to Wallace Street to the east and contains primarily residential land uses and a couple of office buildings and a church. Because the predicted noise levels do not approach or exceed FHWA NAC Criteria with the Year 2040 Build Alternative and are not considered a substantial increase, NSA D is not predicted to have traffic noise impacts.

At some receivers in NSA D, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway and the reduction of acceleration/deceleration related noise due to the proposed roundabout replacing the existing intersection.



## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA E

NSA E is located north of W Bayfront Parkway from just east of Sassafras Street on the west to State Street to the east and contains commercial and industrial land uses. Because the predicted noise levels do not approach or exceed FHWA NAC Criteria with the Year 2040 Build Alternative and are not considered a substantial increase, NSA E is not predicted to have traffic noise impacts.

At some receivers in NSA E, predicted traffic noise levels did not increase or decreased with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

### NSA F

NSA F is located north of E Bayfront Parkway from State Street on the west to Holland Street to the east and contains commercial and institutional land uses. It also contains the Hampton Inn (currently under construction). Because the predicted noise levels do not approach or exceed FHWA NAC Criteria for either Category C (exterior) or Category D (interior) with the Year 2040 Build Alternative and are not considered a substantial increase, NSA F is not predicted to have traffic noise impacts.

At some receivers in NSA F predicted traffic noise levels in NSA F did not increase or decreased slightly with the Build Alternative due to the proposed decrease in overall traffic speed on the Bayfront Parkway, the reduction of acceleration/deceleration related noise due to the proposed roundabouts replacing the existing intersections, and the shielding of traffic on the bypass lanes that travel under the proposed State Street grade separated intersection.

### NSA G

NSA G is located north of E Bayfront Parkway from Holland Street on the west to the railroad tracks west of the Erie Water Treatment Plant to the east and contains commercial and industrial land uses. Because the predicted noise levels do not approach or exceed FHWA NAC with the Year 2040 Build Alternative and are not considered a substantial increase, NSA G is not predicted to have traffic noise impacts.

At some receivers in NSA G, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway and the reduction of acceleration/deceleration related noise due to the proposed roundabout replacing the existing intersection at Holland Street.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### NSA H

NSA H is located south and west of E Bayfront Parkway at the east end of the project area. It contains institutional land uses including activities surrounding the Pennsylvania Soldiers' and Sailors' Home. It also includes the Fort Presque Isle Blockhouse Memorial and a cemetery. Because the predicted noise levels do not approach or exceed FHWA NAC with the Year 2040 Build Alternative and are not considered a substantial increase, NSA H is not predicted to have traffic noise impacts.

At some receivers in NSA H, predicted traffic noise levels did not increase or decreased slightly with the Build Alternative due to the proposed overall decrease in traffic speed on the Bayfront Parkway.

**In summary, no receivers in the Bayfront Parkway Improvements Project area were predicted to have noise levels from the Year 2040 Build Alternative that approached or exceeded FHWA Noise Abatement Criteria and no receivers were predicted to have Year 2040 Build Alternative noise levels that would be considered substantial increases. Therefore, no traffic noise impacts were identified, traffic noise abatement was not warranted, and traffic noise mitigation was not evaluated.**

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### 11. Public Involvement

PennDOT *Publication No. 24* indicates that the public involvement relative to traffic noise should not be conducted until the Preliminary Design Traffic Noise Report has been approved by FHWA and/or and PennDOT Central Office Environmental.

To date, no public involvement relative to the results of this traffic noise analysis has been conducted for the Bayfront Parkway Improvements Project.

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Figures

# Bayfront Parkway Improvements

PennDOT District 1-0

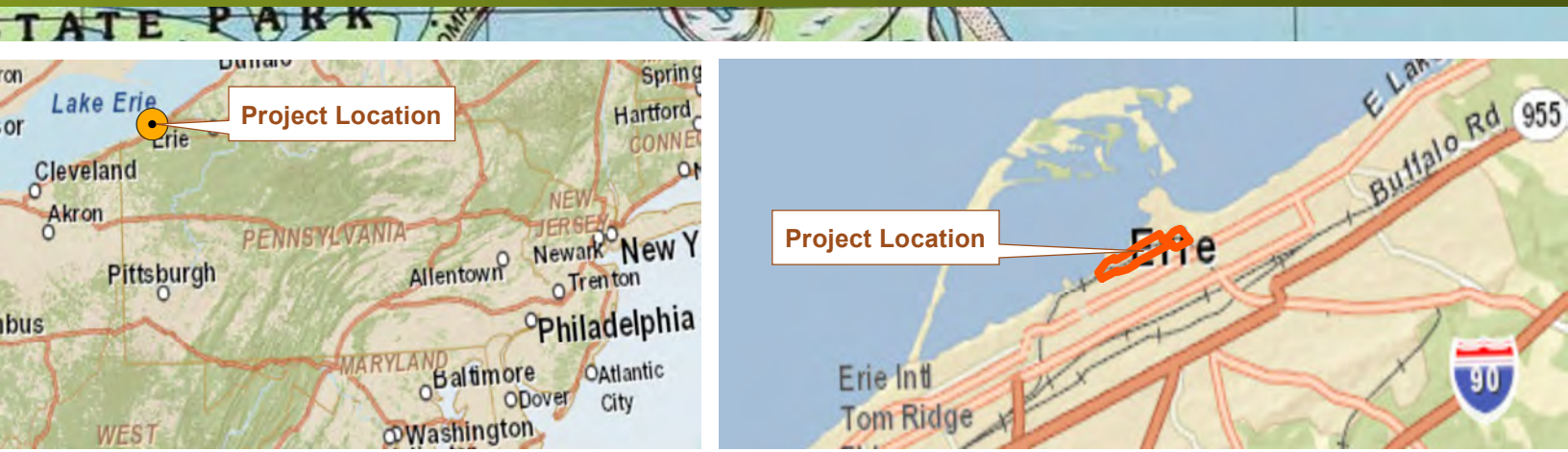


Figure 1  
Project Location Map

Source: USGS



● Short-Term Noise Monitoring Locations  
▭ Noise Sensitive Area

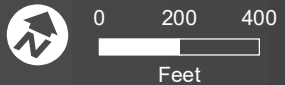
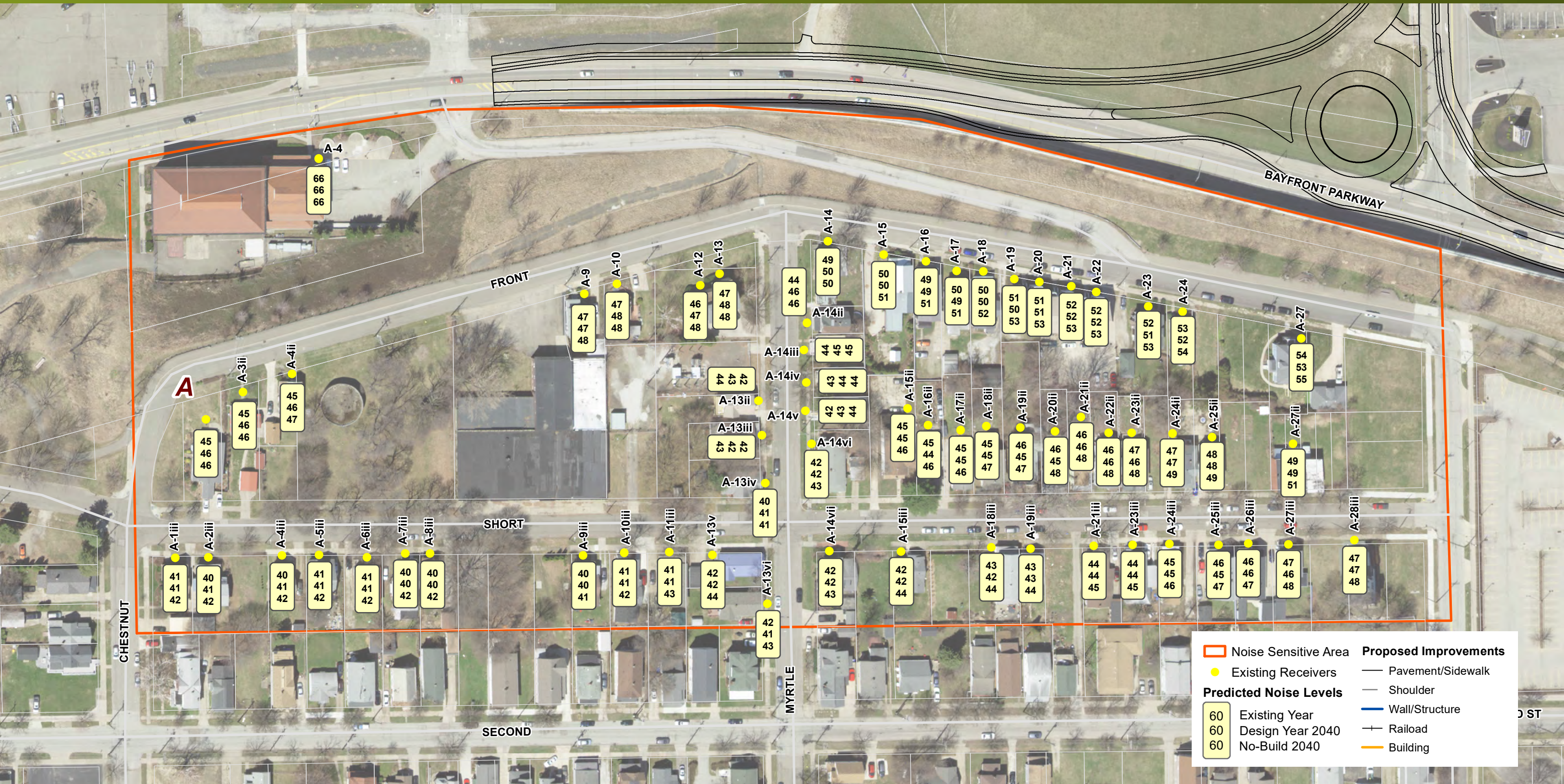


Figure 02  
Proposed Noise Study Areas and Monitoring Locations



	Noise Sensitive Area	<b>Proposed Improvements</b>
	Existing Receivers	
<b>Predicted Noise Levels</b>		
	60 Existing Year	
	60 Design Year 2040	
	60 No-Build 2040	

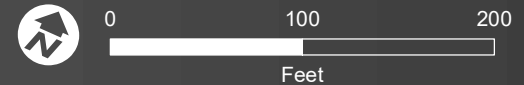


Figure 03a  
NSA A



● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
<b>Predicted Noise Levels</b>	— Shoulder
60 Existing Year	— Wall/Structure
60 Design Year 2040	— Railroad
60 No-Build 2040	— Building

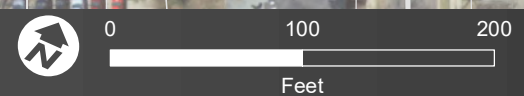
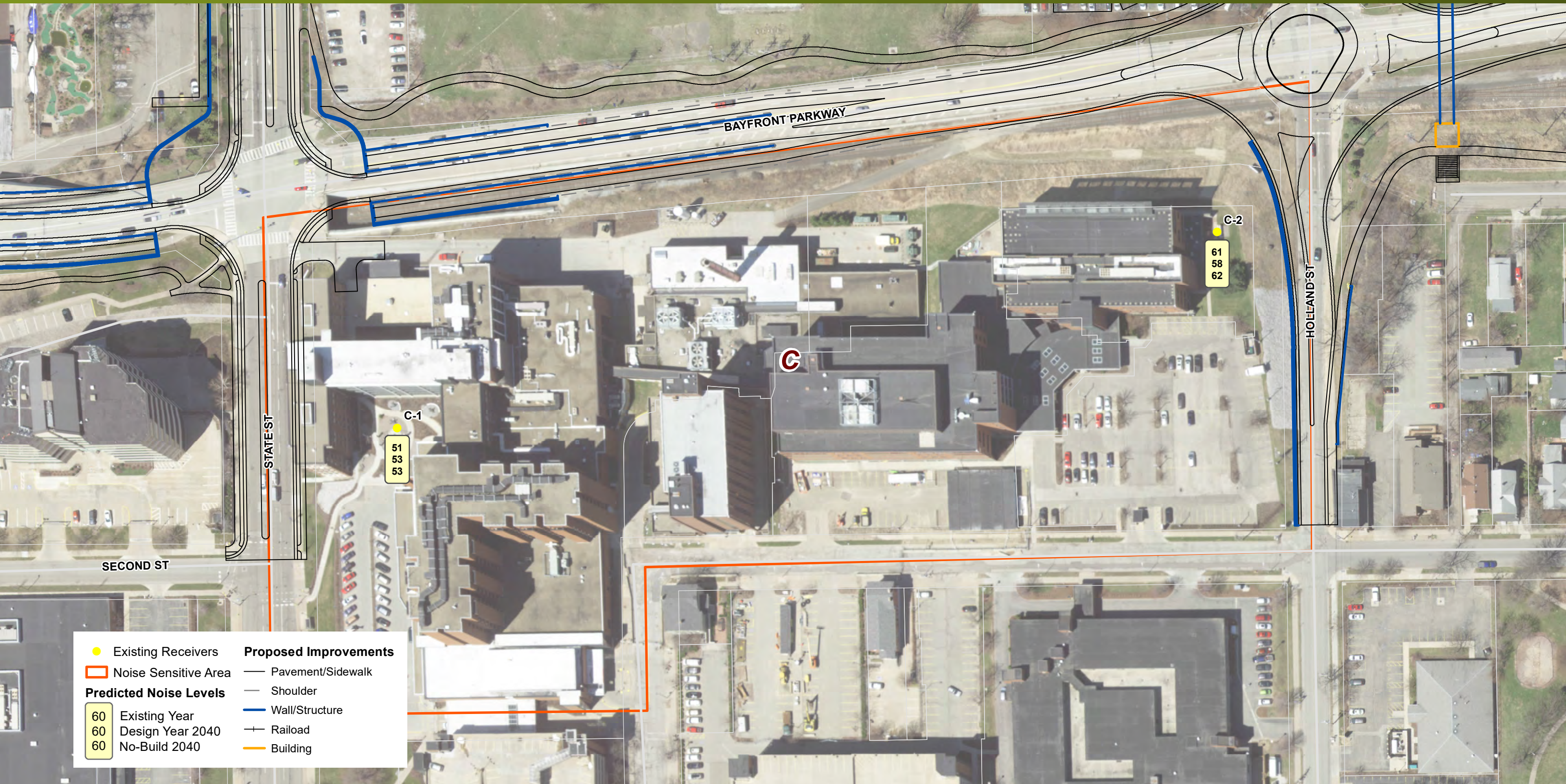


Figure 03b  
NSA B





● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
<b>Predicted Noise Levels</b>	— Shoulder
60 Existing Year	— Wall/Structure
60 Design Year 2040	+ Railroad
60 No-Build 2040	— Building

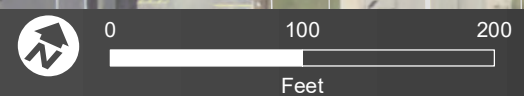
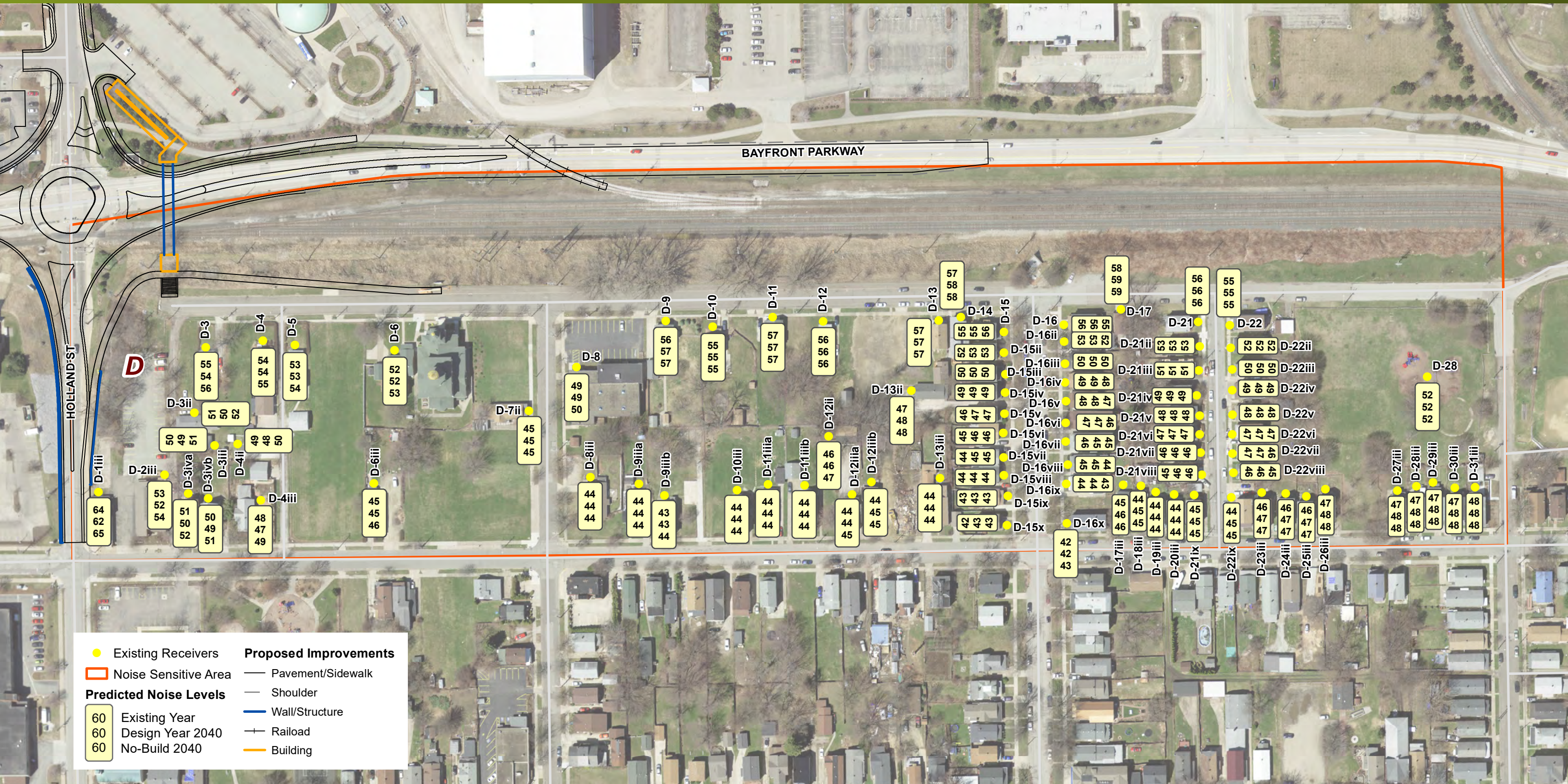


Figure 03c  
NSA C



● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
<b>Predicted Noise Levels</b>	— Shoulder
60 Existing Year	— Wall/Structure
60 Design Year 2040	+ Railroad
60 No-Build 2040	— Building

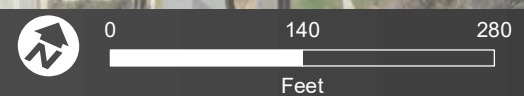
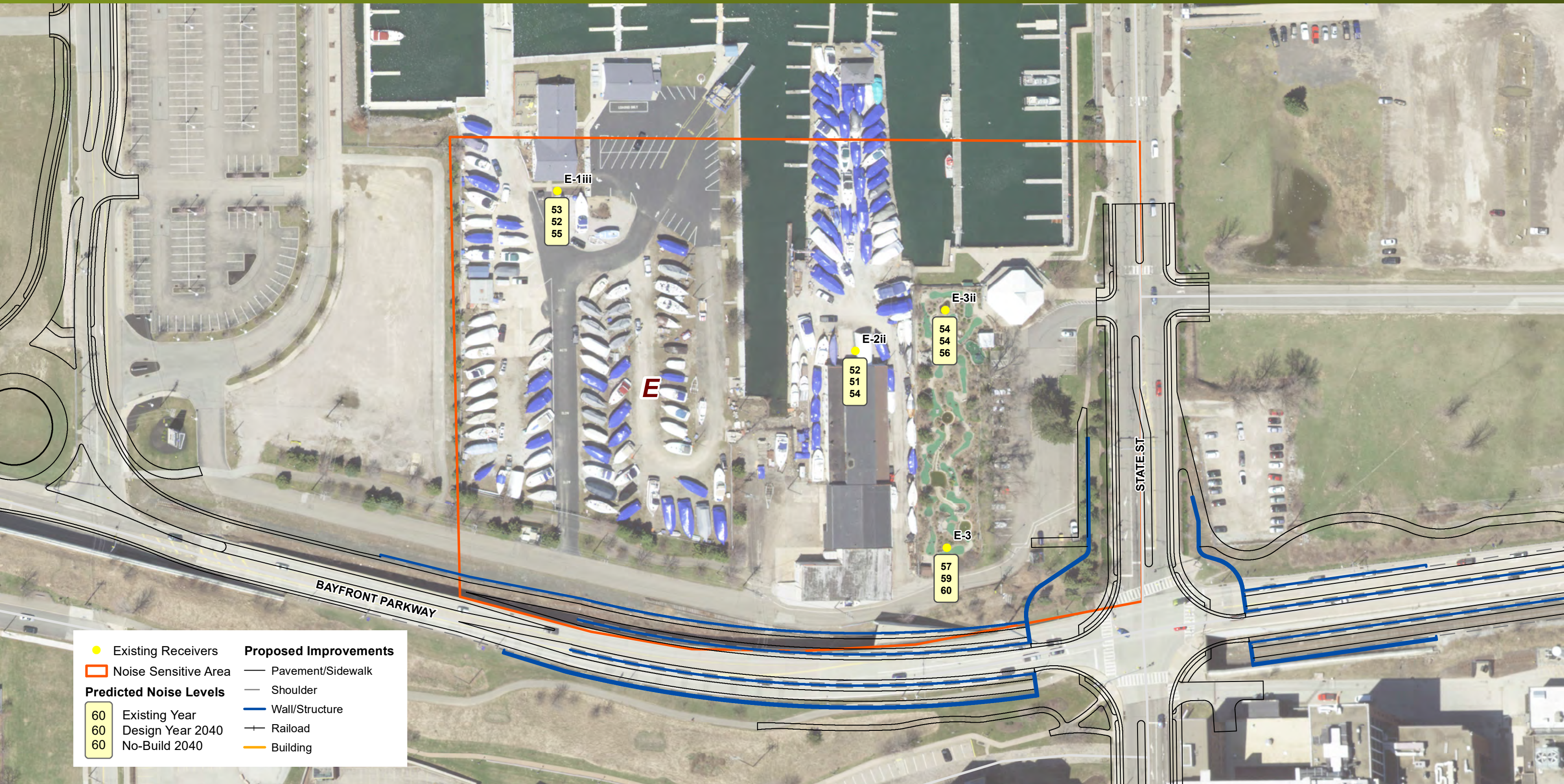


Figure 03d  
NSA D



● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
<b>Predicted Noise Levels</b>	— Shoulder
60 Existing Year	— Wall/Structure
60 Design Year 2040	— Railroad
60 No-Build 2040	— Building

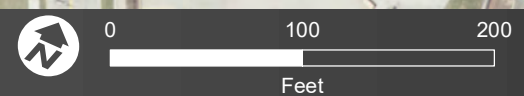


Figure 03e  
NSA E

● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
<b>Predicted Noise Levels</b>	— Shoulder
60 Existing Year	— Wall/Structure
60 Design Year 2040	+ Railroad
60 No-Build 2040	— Building

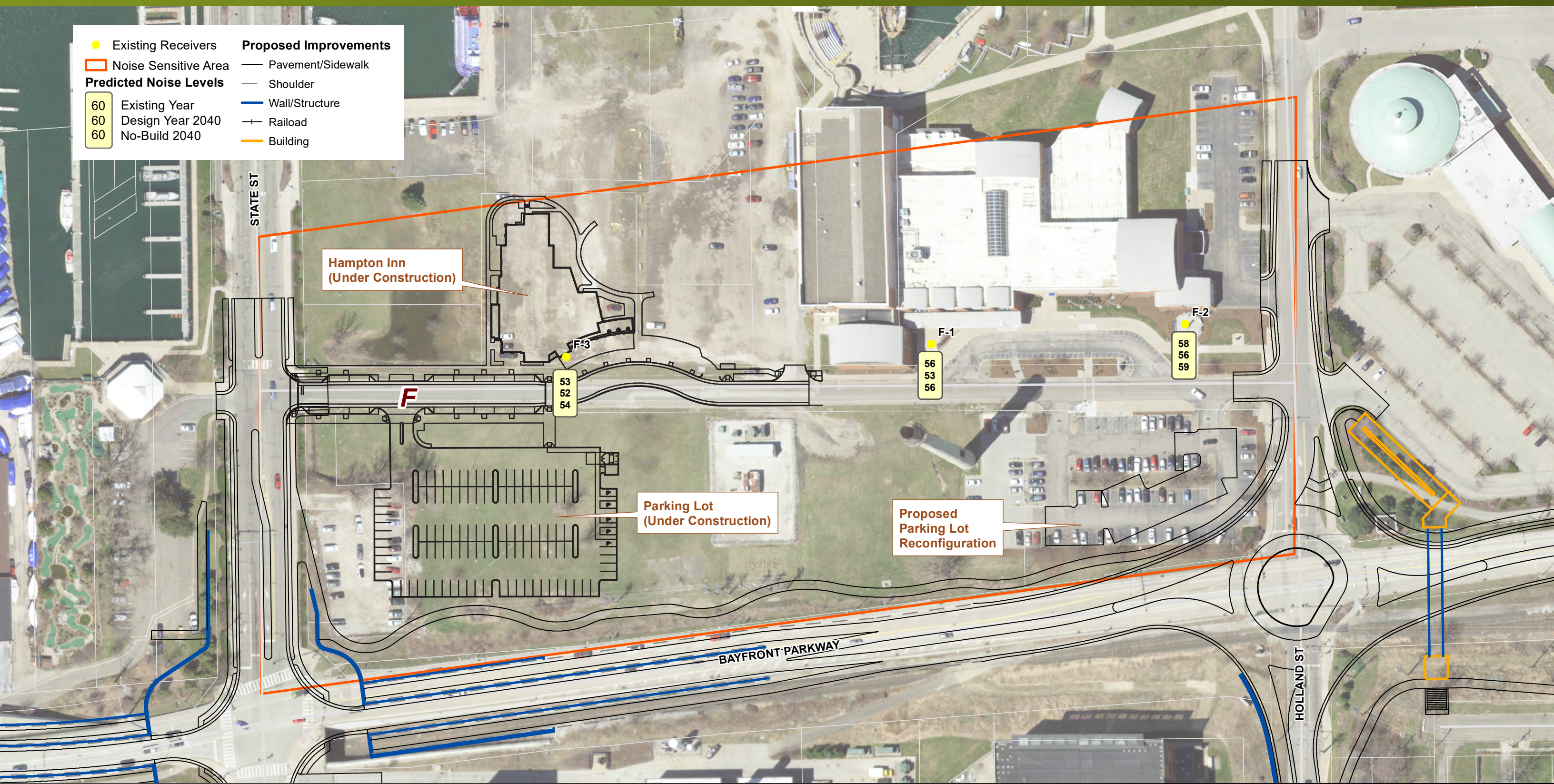


Figure 03f  
NSA F



● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
	— Shoulder
<b>Predicted Noise Levels</b>	— Wall/Structure
60 Existing Year	— Railroad
60 Design Year 2040	— Building
60 No-Build 2040	



Figure 03g  
NSA G



● Existing Receivers	<b>Proposed Improvements</b>
▭ Noise Sensitive Area	— Pavement/Sidewalk
<b>Predicted Noise Levels</b>	— Shoulder
60 Existing Year	— Wall/Structure
60 Design Year 2040	— Railroad
60 No-Build 2040	— Building



Figure 03h  
NSA H

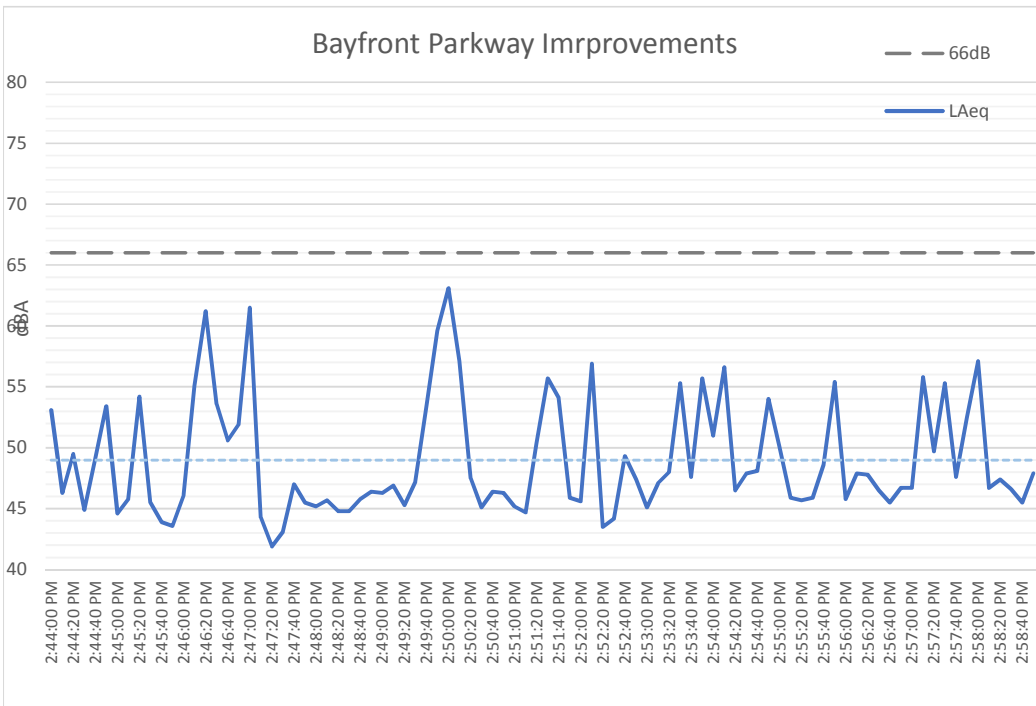
## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Appendix 1

#### Short-term Noise Monitoring Data

## Noise Monitoring Recorded Data

File Name.....	Site A-1 Data Sheet	Date Recorded.....	11/25/2019
Logger.....	Rion A, Seq. 0101	Start Time.....	2:44:00 PM
Project Name.....	Bayfront Parkway Improvements	Stop Time.....	2:59:00 PM
Test Location.....	Site A-1		
Employee Name.....	VRM		
Site Address.....	223 W. Front St. Erie, PA	Site Notes.....	Side Yard
Temperature.....	51 F	Wind Speed.....	Calm
Cloud Cover.....	Clear	Wind Direction.....	E



### Sound Measurements dBA

Min	Mon. Leq
1	49.4
2	46.3
3	53.1
4	47.2
5	45.5
6	49.8
7	50.9
8	49.3
9	47.8
10	49.8
11	50.7
12	48.6
13	46.7
14	51.3
15	48.5

<b>15 Min. Leq</b>	<b>49.0</b>
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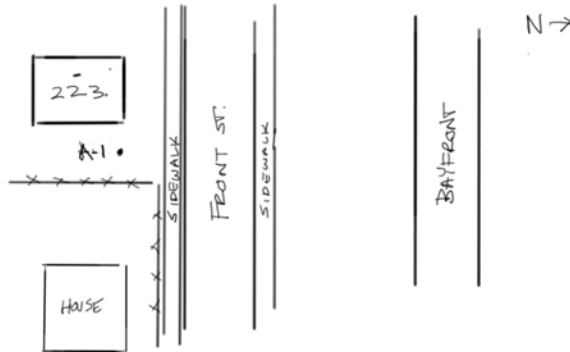
# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

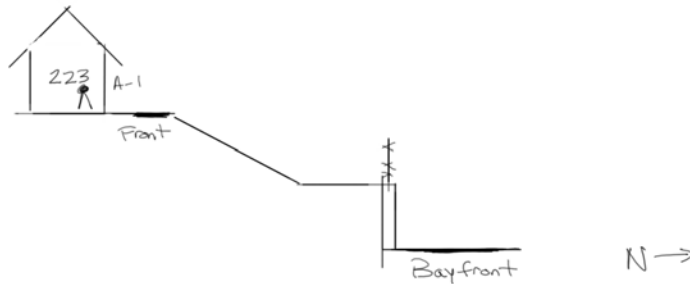
Observer: VRM			
Site ID: A-1	Date: 11/25/19	Location: 223 W. Front St.	
Site Surface: Grass		Landmark: Side Yard	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 51	Cloud Cover: Clear	Wind Speed: Calm	Wind Direction: E
Start Time: 2:44:00 pm		Stop Time: 2:59:00 pm	

Noise Sources: Traffic, Leaves, Dog, 2:45:50 Car Starting, 2:49:00 Sirens in Distance, 2:53:00 Barking/Siren in Distance/Train Horn in Distance, 2:55:40 Sirens

## PLAN VIEW



## ELEVATION VIEW

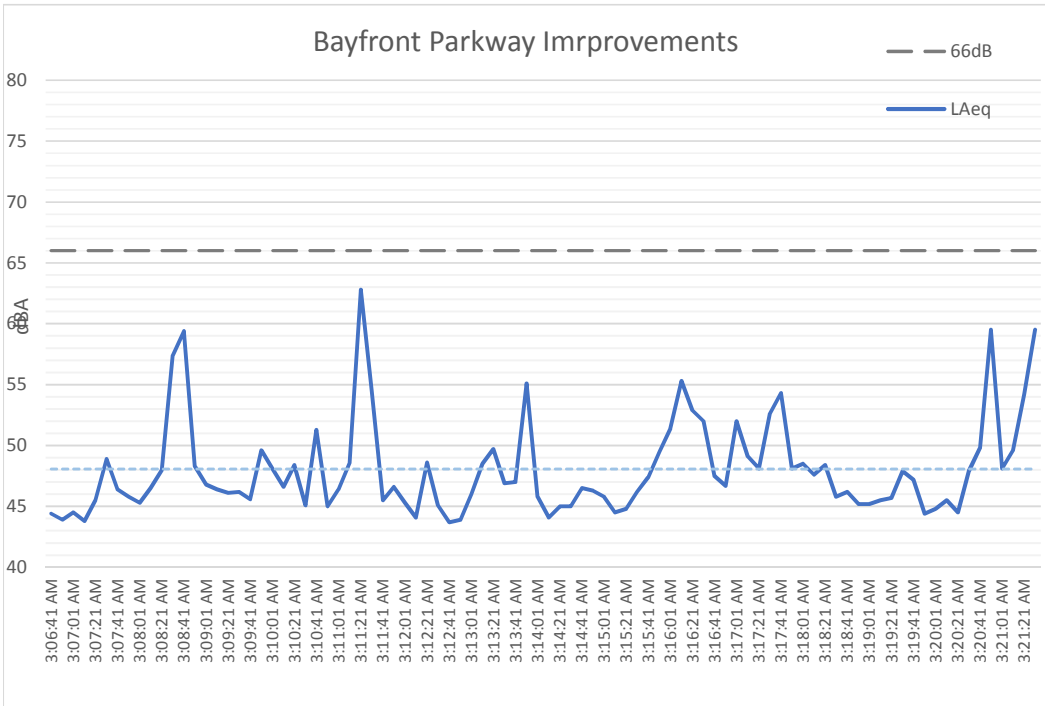


Meter No:   A  

Seq. No:   0101

## Noise Monitoring Recorded Data

File Name.....	Site A-1ii Data Sheet	Date Recorded.....	11/25/2019
Logger.....	Rion A, Seq. 0102	Start Time.....	3:06:50 PM
Project Name.....	Bayfront Parkway Improvements	Stop Time.....	3:21:50 PM
Test Location.....	Site A-1ii		
Employee Name.....	VRM		
Site Address.....	215 Short St. Erie, PA	Site Notes.....	Side Yard
Temperature.....	51 F	Wind Speed.....	Calm
Cloud Cover.....	Clear	Wind Direction.....	E



**Sound Measurements  
dBA**

Min	Mon. Leq
1	45.2
2	48.2
3	48.9
4	47.2
5	51.4
6	45.9
7	46.5
8	47.0
9	45.7
10	51.4
11	49.3
12	48.8
13	46.0
14	45.7
15	53.5

<b>15 Min. Leq</b>	<b>48.0</b>
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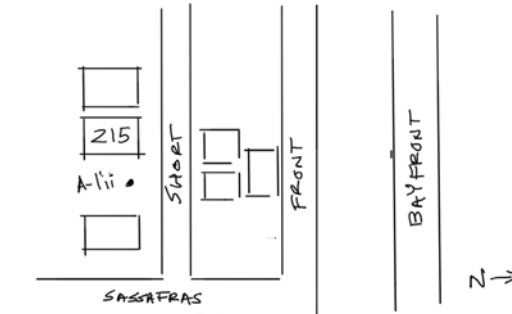
# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

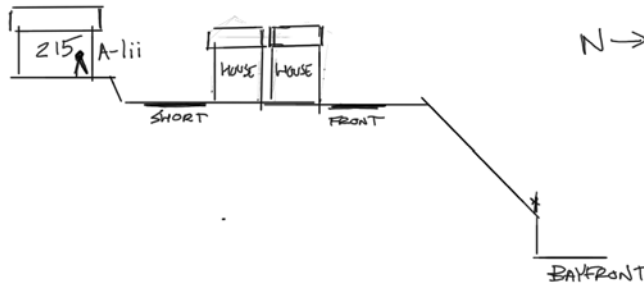
Observer: VRM			
Site ID: A-1ii	Date: 11/25/19	Location: 215 Short St.	
Site Surface: Grass		Landmark: Side Yard	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 51	Cloud Cover: Clear	Wind Speed: Calm	Wind Direction: E
Start Time: 3:06:50 pm		Stop Time: 3:21:50 pm	

Noise Sources: Traffic, Birds, 3:16 School Bus in Distance/Train in Distance, 3:21 Airplane Overhead, 3:19 Car idling down the street

## PLAN VIEW



## ELEVATION VIEW



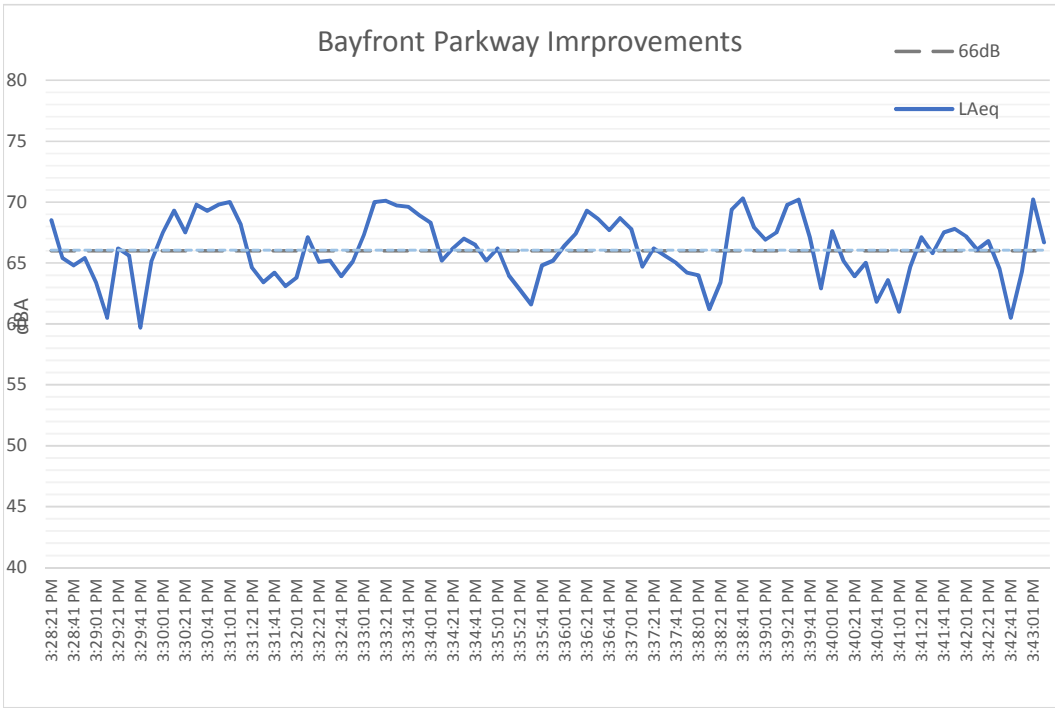
Meter No:   A  

Seq. No:   0102

## Noise Monitoring Recorded Data

File Name..... Site B-1 Data Sheet                      Date Recorded..... 11/25/2019  
 Logger..... Rion A, Seq. 0103                              Start Time..... 3:28:30 PM  
 Project Name..... Bayfront Parkway Improvements      Stop Time..... 3:43:30 PM  
 Test Location..... Site B-1  
 Employee Name..... VRM

Site Address..... 100 State St.                              Site Notes..... Near Pathway, top level  
                                  Erie, PA  
 Temperature..... 50 F                                      Wind Speed..... Calm  
 Cloud Cover..... Clear                                      Wind Direction..... E



# NOISE MONITORING DATA

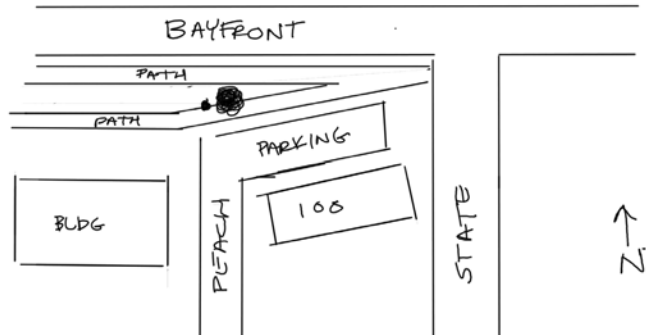
Project: Bayfront Parkway Improvements, PennDOT District 1-0

Observer: VRM			
Site ID: B-1	Date: 11/25/19	Location: 100 State St.	
Site Surface: Grass		Landmark: Near Pathway Top Level	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 50	Cloud Cover: Clear	Wind Speed: Calm	Wind Direction: E
Start Time: 3:28:30 pm		Stop Time: 3:43:30 pm	

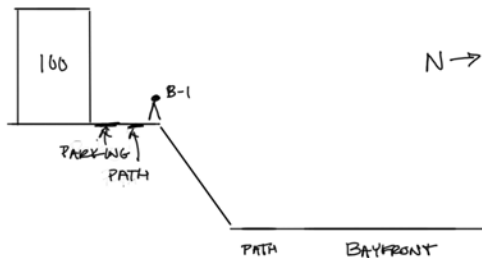
Noise Sources: Traffic, Birds, 3:38 Sirens in Distance, 3:40 Backing Alarm

Video 3:30-3:40

**PLAN VIEW**



**ELEVATION VIEW**



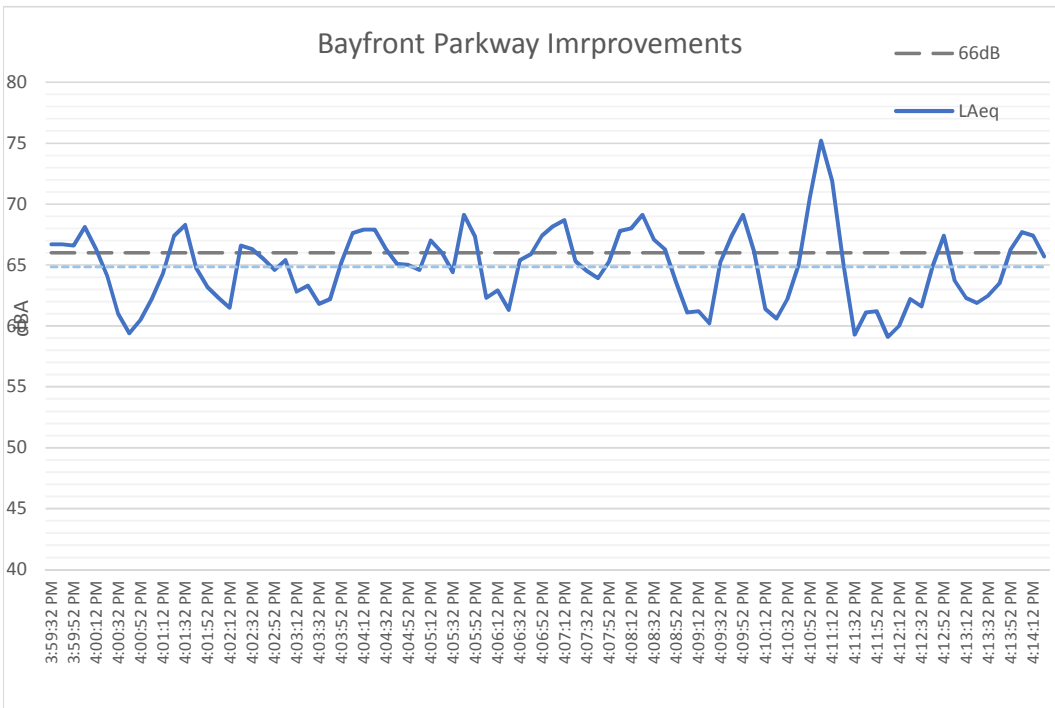
Meter No:   A  

Seq. No:   0103

## Noise Monitoring Recorded Data

File Name..... Site C-1 Data Sheet                      Date Recorded..... 11/25/2019  
 Logger..... Rion A, Seq. 0104                      Start Time..... 3:59:40 PM  
 Project Name..... Bayfront Parkway Improvements                      Stop Time..... 4:14:40 PM  
 Test Location..... Site C-1  
 Employee Name..... VRM

Site Address..... UPMC Hamot Heart Institute                      Site Notes..... Top of hill between building and  
 120 E. 2nd St., Erie, PA                      Bayfront Parkway  
 Temperature..... 50 F                      Wind Speed..... 3-5 mph  
 Cloud Cover..... Overcast                      Wind Direction..... E



# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

Observer: VRM			
Site ID: C-1	Date: 11/25/19	Location: UPMC Hamot Heart Institute 120 E 2 <sup>nd</sup> Street	
Site Surface: Grass		Landmark: Top of Hill Between Building and Bayfront Pkwy	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 50	Cloud Cover: Overcast	Wind Speed: 3-5mph	Wind Direction: E
Start Time: 3:59:40 pm		Stop Time: 4:14:40 pm	
Noise Sources: Traffic			
PLAN VIEW			
<p>The plan view diagram shows a top-down perspective. On the left is a rectangular building labeled 'UPMC'. To its right is a small circle labeled 'C-1'. Below the building is a dashed line labeled 'WALK'. A horizontal line labeled 'HOLLAND' runs across the middle. To the right of Holland is a vertical line with cross-ticks labeled 'RR'. Further right is another vertical line labeled 'BAYFRONT'. A north arrow 'N' with a right-pointing arrow is located to the right of the RR line.</p>			
ELEVATION VIEW			
<p>The elevation view diagram shows a side profile. On the left is a rectangular building labeled 'UPMC'. To its right is a small figure labeled 'C-1'. Below the building is a dashed line labeled 'WALK'. A diagonal line connects 'C-1' to a horizontal line representing the ground level. Below this ground level is a horizontal line with cross-ticks labeled 'RR'. To the right of the RR line is another horizontal line labeled 'BAYFRONT'. Further right is a rectangular building labeled 'LIBRARY'. A north arrow 'N' with a right-pointing arrow is located to the right of the RR line.</p>			

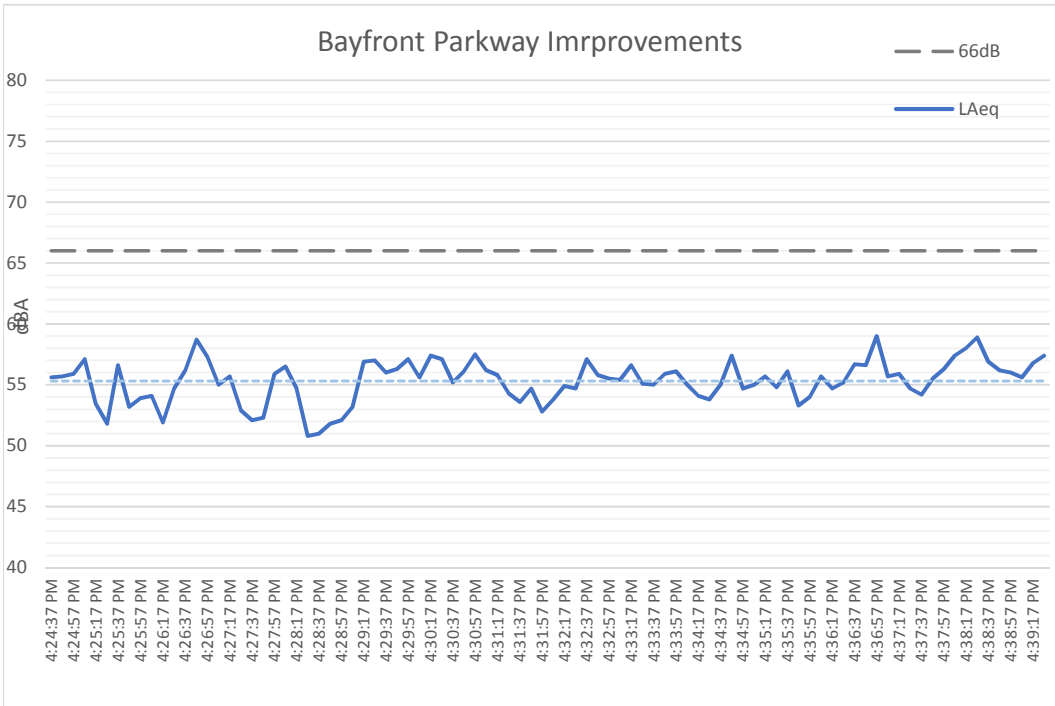
Meter No:   A  

Seq. No:   0104

## Noise Monitoring Recorded Data

File Name..... Site D-1 Data Sheet                      Date Recorded..... 11/25/2019  
 Logger..... Rion A, Seq. 0105                      Start Time..... 4:24:45 PM  
 Project Name..... Bayfront Parkway Improvements                      Stop Time..... 4:39:45 PM  
 Test Location..... Site D-1  
 Employee Name..... VRM

Site Address..... 247 Front St.                      Site Notes..... Front yard of house near church  
                                  Erie, PA  
 Temperature..... 47 F                      Wind Speed..... 3-5 mph  
 Cloud Cover..... Overcast                      Wind Direction..... E



**Sound Measurements  
dBA**

Min	Mon. Leq
1	54.9
2	54.1
3	56.0
4	53.7
5	53.7
6	56.6
7	55.9
8	54.1
9	55.9
10	55.0
11	55.4
12	54.8
13	56.4
14	56.7
15	56.5

<b>15 Min. Leq</b>	<b>55.3</b>
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# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

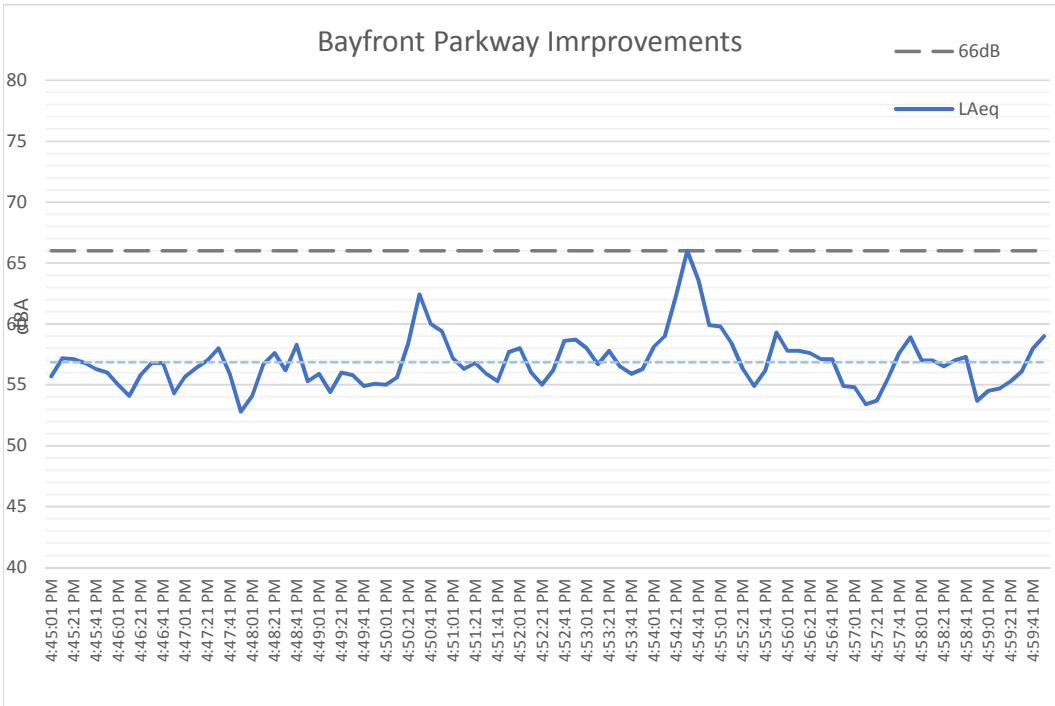
Observer: VRM			
Site ID: D-1	Date: 11/25/19	Location: 247 Front St.	
Site Surface: Grass		Landmark: Front Yard of house near Church	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 47	Cloud Cover: Overcast	Wind Speed: 3-5mph	Wind Direction: E
Start Time: 4:24:45 pm		Stop Time: 4:39:45 pm	
Noise Sources: Traffic, Birds, 4:33 Sirens to south			
Video: 4:27-4:37			
PLAN VIEW			
ELEVATION VIEW			

Meter No:   A  

Seq. No:   0105

## Noise Monitoring Recorded Data

File Name.....	Site D-2 Data Sheet	Date Recorded.....	11/25/2019
Logger.....	Rion A, Seq. 0106	Start Time.....	4:45:10 PM
Project Name.....	Bayfront Parkway Improvements	Stop Time.....	5:00:10 PM
Test Location.....	Site D-2		
Employee Name.....	VRM		
Site Address.....	331 Front St. Erie, PA	Site Notes.....	Side Yard
Temperature.....	45 F	Wind Speed.....	Calm
Cloud Cover.....	Overcast	Wind Direction.....	E



### Sound Measurements dBA

Min	Mon. Leq
1	56.5
2	55.5
3	56.0
4	56.4
5	55.4
6	58.5
7	56.5
8	57.1
9	56.9
10	61.5
11	57.5
12	57.1
13	55.7
14	56.4
15	56.3

<b>15 Min. Leq</b>	<b>56.9</b>
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# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

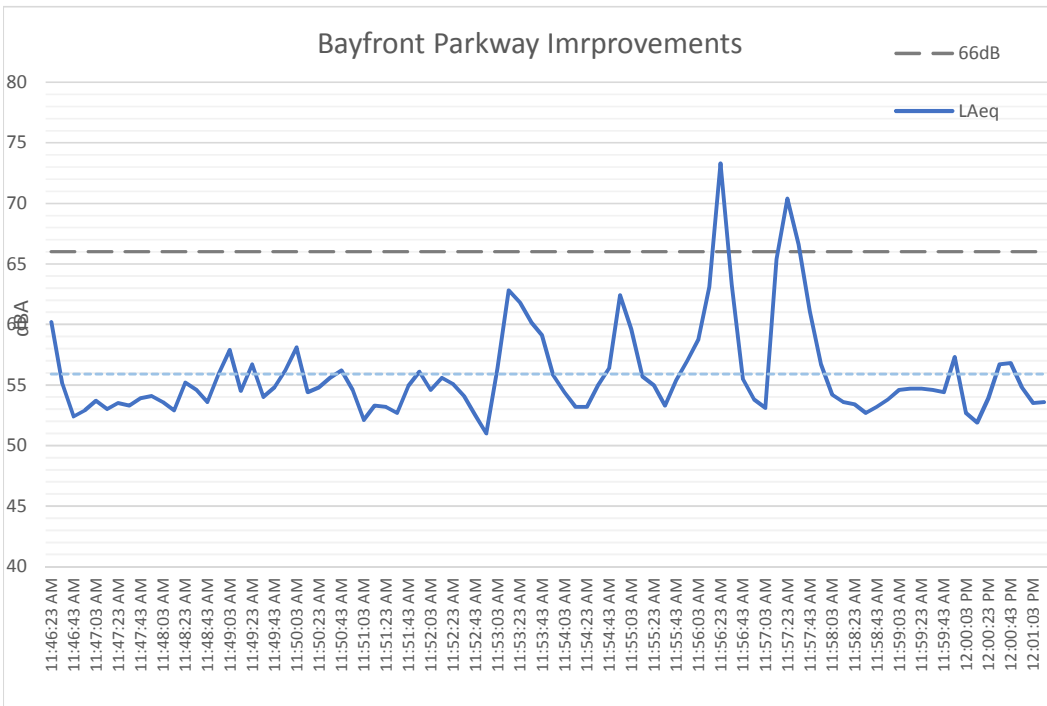
Observer: VRM			
Site ID: D-2	Date: 11/25/19	Location: 331 Front St.	
Site Surface: Grass		Landmark: Side yard	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 45	Cloud Cover: Overcast	Wind Speed: Calm	Wind Direction: E
Start Time: 4:45:10 pm		Stop Time: 5:00:10 pm	
Noise Sources: Traffic, Intermittent Hammering, 4:50 Airplane Overhead, 4:52 Heavy Hammering, 4:54 Airplane Overhead, 4:55 Neighbor Opening Door Video: 4:46-4:56			
PLAN VIEW			
ELEVATION VIEW			

Meter No:   A  

Seq. No:   0106

## Noise Monitoring Recorded Data

File Name.....	Site E-1 Data Sheet	Date Recorded.....	11/26/2019
Logger.....	Rion A, Seq. 0109	Start Time.....	11:46:30 AM
Project Name.....	Bayfront Parkway Improvements	Stop Time.....	12:01:30 PM
Test Location.....	Site E-1		
Employee Name.....	VRM		
Site Address..... Harbor View Miniature Golf		Site Notes.....	Southeast corner of course
	36 State St., Erie, PA		near parking lot
Temperature.....	52 F	Wind Speed.....	3-7 mph
Cloud Cover.....	Clear	Wind Direction.....	E



**Sound Measurements  
dBA**

Min	Mon. Leq
1	54.6
2	53.6
3	55.3
4	55.7
5	54.4
6	54.5
7	55.3
8	57.4
9	57.1
10	57.1
11	60.7
12	60.4
13	53.7
14	54.3
15	54.9

<b>15 Min. Leq</b>	<b>55.9</b>
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# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

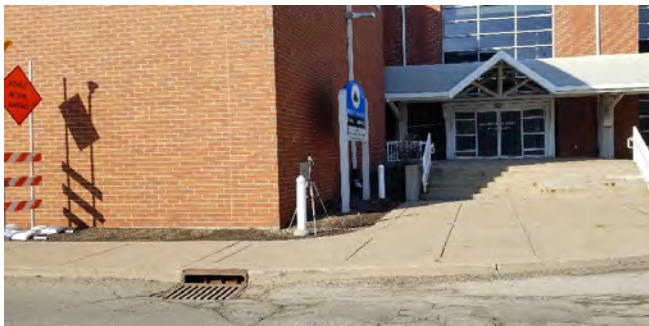
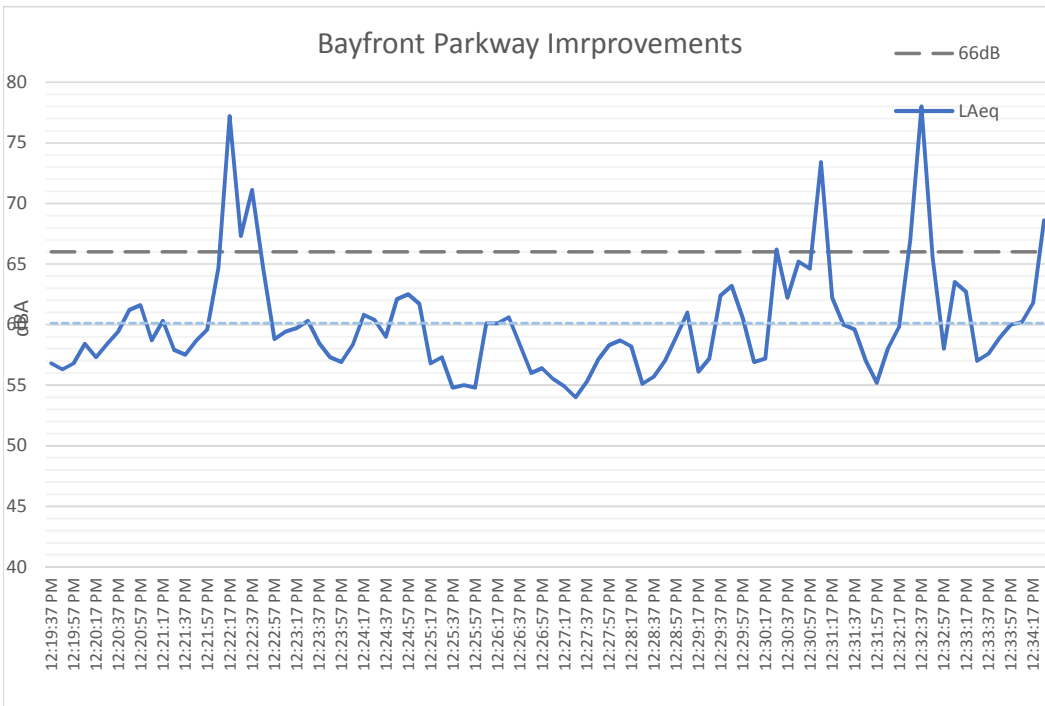
Observer: VRM			
Site ID: E-1	Date: 11/26/19	Location: Harbor View Miniature Golf 36 State Street	
Site Surface: Grass		Landmark: Southeast Corner of Course near Parking Lot	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 52	Cloud Cover: Clear	Wind Speed: 11:46 3-5mph 11:56 5-7mph	Wind Direction: E
Start Time: 11:46:30 am		Stop Time: 12:01:30 pm	
Noise Sources: Traffic			
Video: 11:49-11:59			
PLAN VIEW			
ELEVATION VIEW			

Meter No:   A  

Seq. No:   0109

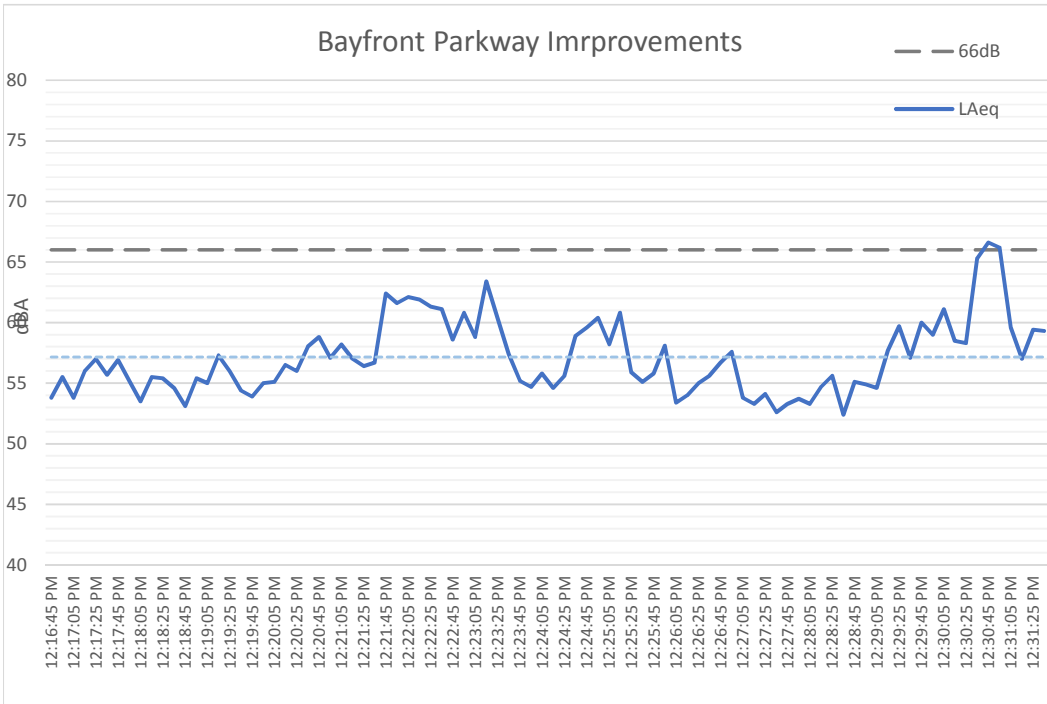
## Noise Monitoring Recorded Data

File Name.....	Site F-1 Data Sheet	Date Recorded.....	11/26/2019
Logger.....	Rion A, Seq. 0110	Start Time.....	12:19:45 PM
Project Name.....	Bayfront Parkway Improvements	Stop Time.....	12:34:45 PM
Test Location.....	Site F-1		
Employee Name.....	VRM		
Site Address.....		Site Notes.....	Near corner of building
Erie Maritime Museum 150 Front St., Erie, PA			
Temperature.....	52 F	Wind Speed.....	3-5 mph
Cloud Cover.....	Clear	Wind Direction.....	E



## Noise Monitoring Recorded Data

File Name.....	Site F-2 Data Sheet	Date Recorded.....	11/26/2019
Logger.....	Rion B, Seq. 0201	Start Time.....	12:16:45 PM
Project Name.....	Bayfront Parkway Improvements	Stop Time.....	12:31:45 PM
Test Location.....	Site F-2		
Employee Name.....	VRM		
Site Address.....		Site Notes.....	Near corner of building
Blasco Memorial Library			
160 Front St., Erie, PA			
Temperature.....	52 F	Wind Speed.....	3-5 mph
Cloud Cover.....	Clear	Wind Direction.....	E



Sound Measurements dBA	
Min	Mon. Leq
1	55.3
2	55.2
3	55.2
4	55.8
5	57.4
6	61.7
7	59.9
8	55.8
9	58.3
10	55.3
11	54.7
12	53.8
13	56.5
14	60.4
15	61.4
<b>15 Min. Leq</b>	<b>57.1</b>



# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

Observer: VRM			
Site ID: F-1, F-2	Date: 11/26/19	Location: Erie Maritime Museum (F-1) 150 Front Street, Blasco Memorial Library (F-2) 160 Front Street	
Site Surface: Dirt (F-1), Grass (F-2)		Landmark: F-1 – Near Corner of Building near Stairs, F-2 – Just East of Monument	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 52	Cloud Cover: Clear	Wind Speed: 3-5mph	Wind Direction: E
Start Time: F-1 - 12:19:45 pm F-2 – 12:16:45 pm		Stop Time: F-1 - 12:34:45 pm F-2 – 12:31:45 pm	
Noise Sources: Traffic, Birds, Customers, 12:31 Horn, Construction Noise at F-1			
PLAN VIEW			
ELEVATION VIEW			

Meter No: \_A (F-1), B (F-2)\_

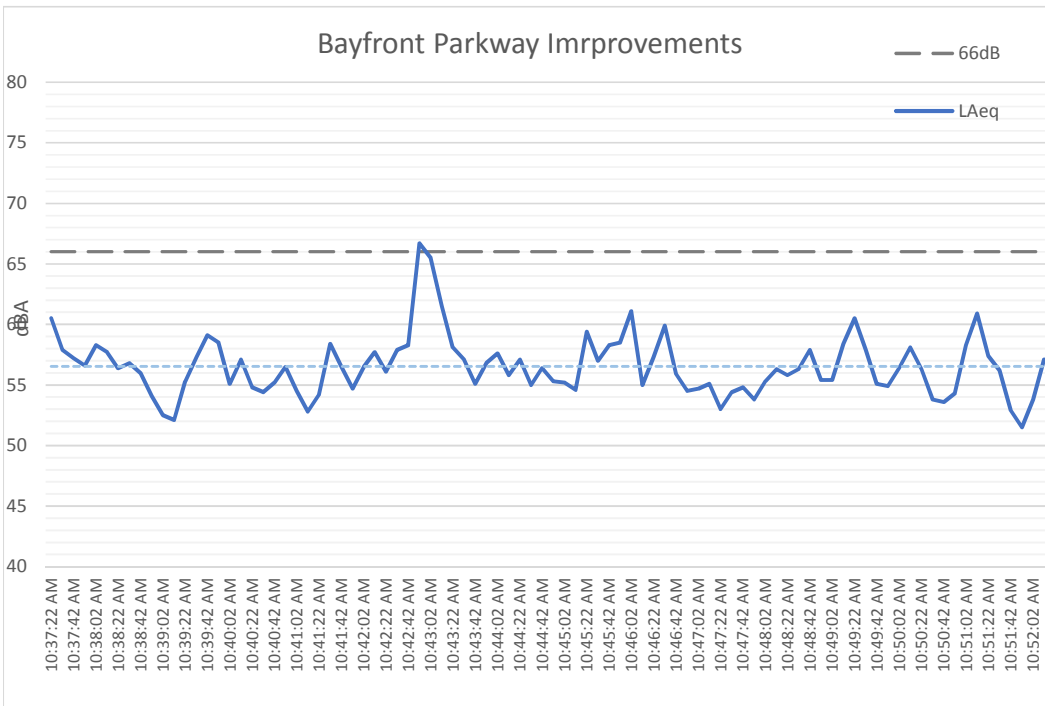
Seq. No: \_\_0110 (F-1), 0201 (F-2)\_\_



## Noise Monitoring Recorded Data

File Name..... Site H-1 Data Sheet                      Date Recorded..... 11/26/2019  
 Logger..... Rion B, Seq. 0107                      Start Time..... 10:37:30 AM  
 Project Name..... Bayfront Parkway Improvements                      Stop Time..... 10:52:30 AM  
 Test Location..... Site H-1  
 Employee Name..... VRM

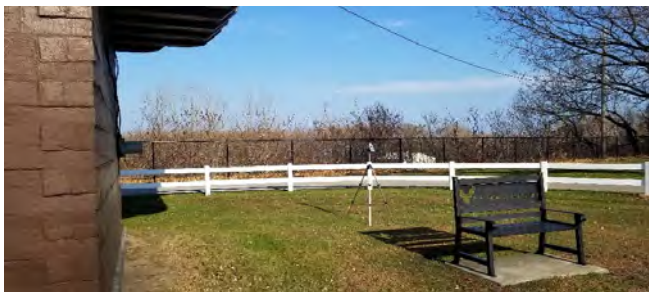
Site Address..... General Wayne Anthony Memorial                      Site Notes..... Just east of monument  
 Erie, PA  
 Temperature..... 51 F                      Wind Speed..... 0-5 mph  
 Cloud Cover..... Partly Cloudy                      Wind Direction..... E



**Sound Measurements  
dBA**

Min	Mon. Leq
1	58.0
2	54.7
3	57.1
4	54.7
5	56.3
6	61.0
7	56.8
8	55.6
9	58.2
10	56.2
11	54.6
12	56.5
13	57.2
14	56.2
15	54.8

<b>15 Min. Leq</b>	<b>56.5</b>
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# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

Observer: VRM			
Site ID: H-1	Date: 11/26/19	Location: General Anthony Wayne Memorial	
Site Surface: Grass		Landmark: Just East of Monument	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 51	Cloud Cover: Partly Cloudy	Wind Speed: 0-5mph	Wind Direction: E
Start Time: 10:37:30 am		Stop Time: 10:52:30 pm	
Noise Sources: Traffic, Leaves, 10:43 Airplane Overhead			
Video: 10:40:40-10:50:40			
PLAN VIEW			
ELEVATION VIEW			

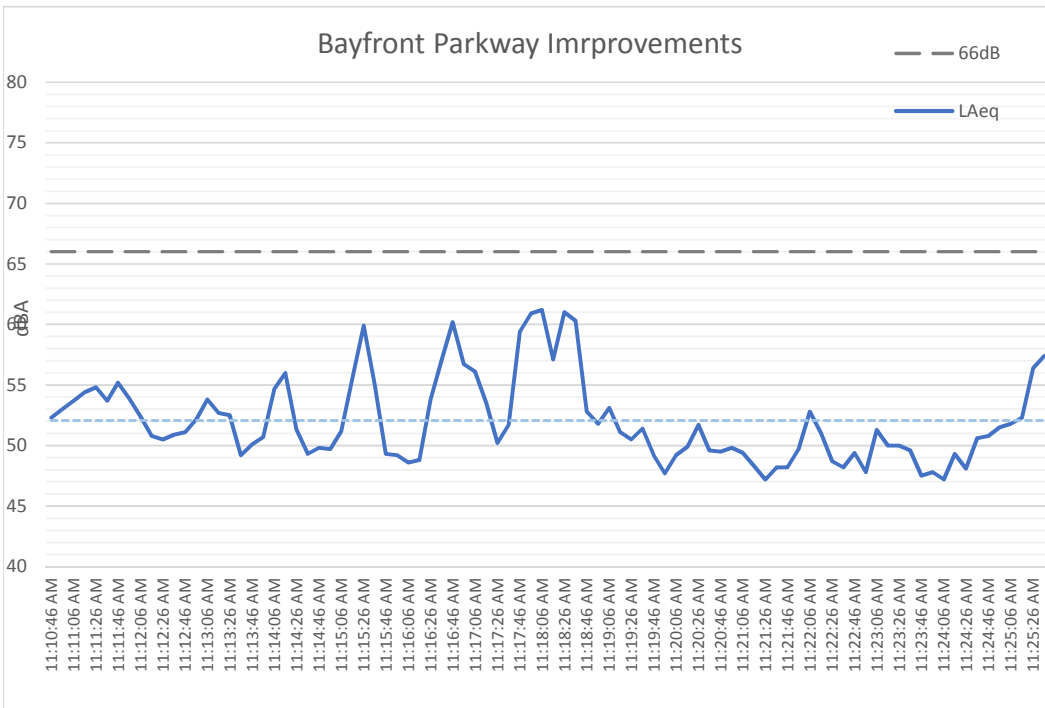
Meter No:   A  

Seq. No:   0107

## Noise Monitoring Recorded Data

File Name..... Site H-2 Data Sheet                      Date Recorded..... 11/26/2019  
 Logger..... Rion B, Seq. 0108                      Start Time..... 11:11:20 AM  
 Project Name..... Bayfront Parkway Improvements                      Stop Time..... 11:26:20 AM  
 Test Location..... Site H-2  
 Employee Name..... VRM

Site Address..... PA Soliers and Sailors Home                      Site Notes..... West of gazebo  
 560 E. 3rd St., Erie, PA  
 Temperature..... 51 F                      Wind Speed..... 3-5 mph  
 Cloud Cover..... Partly Cloudy                      Wind Direction..... E



Sound Measurements dBA	
Min	Mon. Leq
1	53.7
2	52.3
3	51.9
4	52.0
5	53.6
6	51.1
7	54.7
8	60.0
9	51.8
10	49.6
11	48.7
12	49.8
13	49.7
14	48.4
15	53.4
<b>15 Min. Leq</b>	<b>52.0</b>



# NOISE MONITORING DATA

Project: Bayfront Parkway Improvements, PennDOT District 1-0

Observer: VRM			
Site ID: H-2	Date: 11/26/19	Location: PA Soldiers and Sailors Home 560 E 3 <sup>rd</sup> Street	
Site Surface: Grass		Landmark: West of Gazebo	
Near Lane Direction: EB	Pavement Type: Asphalt		
Temperature: 51	Cloud Cover: Partly Cloudy	Wind Speed: 3-5mph	Wind Direction: E
Start Time: 11:11:20 am		Stop Time: 11:26:20 am	
Noise Sources: Birds, Leaves, 11:11-11:14 Leaf Blower, 11:16 Conversation Nearby, 11:17-11:21 Leaf Blower, 11:21 Siren in Distance, 11:22 Truck in Parking Lot, 11:25-end Leaf Blower, 11:25-end Siren in Distance, No discernable roadway traffic noise.			
PLAN VIEW			
ELEVATION VIEW			

Meter No:   A  

Seq. No:   0108



Weather observations for the past three days



Erie, Erie International Airport

Enter Your "City, ST" or zip code

metric

Date	Time (est)	Wind (mph)	Vis. (mi.)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill (°F)	Heat Index (°F)	Pressure		Precipitation (in.)		
						Air	Dwpt	6 hour					altimeter (in)	sea level (mb)	1 hr	3 hr	6 hr
								Max.	Min.								
27	12:51	SW 17 G 25	10.00	Partly Cloudy	SCT065	56	49	57	52	77%	NA	NA	29.43	996.6			0.12
27	11:51	S 14 G 25	7.00	Light Rain	FEW016 BKN022 OVC070	54	49			83%	NA	NA	29.42	996.3	0.09		
27	10:51	S 22 G 36	10.00	Overcast and Breezy	SCT025 SCT036 OVC090	53	47			80%	NA	NA	29.46	997.7	0.02		
27	09:51	S 25 G 48	10.00	Overcast and Breezy	FEW035 OVC043	54	44			69%	NA	NA	29.48	998.2		0.01	
27	08:51	S 29 G 49	10.00	Mostly Cloudy and Windy	SCT033 SCT055 BKN075	53	41			64%	NA	NA	29.53	1000.0			
27	07:51	S 16 G 32	10.00	Overcast	OVC090	54	38			55%	NA	NA	29.57	1001.6	0.01		
27	06:51	S 18 G 25	10.00	Overcast	OVC090	53	39	55	50	59%	NA	NA	29.61	1002.8			0.03
27	05:51	SE 10	10.00	Overcast	OVC080	52	37			57%	NA	NA	29.67	1004.8			
27	04:51	S 10	7.00	Light Rain	OVC060	50	40			68%	46	NA	29.73	1007.1	0.03		
27	03:51	S 14	10.00	Light Rain	FEW060 OVC080	55	34			45%	NA	NA	29.77	1008.3			
27	02:51	SE 10 G 17	10.00	Overcast	OVC095	55	34			45%	NA	NA	29.80	1009.1			
27	01:51	SE 8	10.00	Overcast	BKN090 OVC110	55	35			47%	NA	NA	29.80	1009.2			
27	00:51	SE 9	10.00	Overcast	OVC090	54	36	55	45	51%	NA	NA	29.83	1010.4			
26	23:51	SE 9	10.00	Overcast	OVC095	54	37			53%	NA	NA	29.86	1011.3			
26	22:51	SE 6	10.00	Partly Cloudy	SCT120	52	38			59%	NA	NA	29.89	1012.3			
26	21:51	SE 6	10.00	Partly Cloudy	SCT100	50	38			63%	48	NA	29.91	1013.1			
26	20:51	S 5	10.00	Overcast	OVC100	50	39			66%	48	NA	29.92	1013.4			
26	19:51	Calm	7.00	Overcast	BKN065 OVC100	46	40			79%	NA	NA	29.93	1013.8			
26	18:51	E 3	9.00	Overcast	BKN065 OVC075	47	40	52	45	77%	NA	NA	29.94	1014.0			
26	17:51	Calm	9.00	Partly Cloudy	SCT080	47	40			77%	NA	NA	29.92	1013.6			
26	16:51	E 6	9.00	Mostly Cloudy	FEW060 SCT080	47	41			80%	44	NA	29.93	1013.8			

BKN090

26	15:51	Calm	10.00	Fair	CLR	49	40			71%	NA	NA	29.93	1013.9	
26	14:51	NW 5	10.00	Fair	CLR	51	40			66%	NA	NA	29.92	1013.4	
26	13:51	W 6	10.00	Fair	CLR	51	40			66%	NA	NA	29.93	1013.7	
26	12:51	W 9	10.00	Fair	CLR	52	39	54	46	61%	NA	NA	29.94	1013.9	
26	11:51	W 9 G 16	10.00	Fair	CLR	53	38			57%	NA	NA	29.93	1013.8	
26	10:51	W 13	10.00	Fair	CLR	54	38			55%	NA	NA	29.94	1014.1	
26	09:51	SW 9	10.00	Fair	CLR	52	38			59%	NA	NA	29.93	1013.6	
26	08:51	SW 10	10.00	Fair	CLR	50	37			61%	46	NA	29.90	1012.8	
26	07:51	S 12	10.00	Fair	CLR	47	36			66%	42	NA	29.88	1012.1	
26	06:51	SW 10	10.00	Fair	CLR	48	36	51	47	63%	44	NA	29.85	1011.1	
26	05:51	S 13	10.00	Fair	CLR	48	36			63%	43	NA	29.82	1010.1	
26	04:51	S 14	10.00	Fair	CLR	49	36			61%	44	NA	29.81	1009.6	
26	03:51	S 14	10.00	Fair	CLR	50	36			59%	45	NA	29.79	1009.0	
26	02:51	S 17	10.00	Fair	CLR	50	36			59%	44	NA	29.79	1008.9	
26	01:51	S 17 G 24	10.00	Fair	CLR	50	35			57%	44	NA	29.77	1008.4	
26	00:51	SW 15 G 26	10.00	Fair	CLR	51	35	52	49	54%	NA	NA	29.77	1008.3	
25	23:51	S 18 G 30	10.00	Fair	CLR	51	35			54%	NA	NA	29.76	1008.2	
25	22:51	S 14 G 23	10.00	Fair	CLR	50	35			57%	45	NA	29.76	1008.0	
25	21:51	S 15 G 26	10.00	Fair	CLR	50	36			59%	45	NA	29.76	1008.0	
25	20:51	S 16	10.00	Fair	CLR	50	37			61%	44	NA	29.74	1007.6	
25	19:51	S 16 G 22	10.00	Partly Cloudy	SCT110	51	37			59%	NA	NA	29.74	1007.3	
25	18:51	S 14	10.00	Fair	CLR	50	37	54	50	61%	45	NA	29.74	1007.4	0.48
25	17:51	S 7	10.00	Fair	CLR	50	37			61%	47	NA	29.74	1007.5	
25	16:51	S 7	10.00	Fair	CLR	51	36			56%	NA	NA	29.73	1007.2	
25	15:51	SW 10	10.00	Fair	CLR	53	36			52%	NA	NA	29.73	1006.9	0.01 0.48
25	14:51	SW 13	10.00	Fair	CLR	53	37			55%	NA	NA	29.72	1006.6	0.47
25	13:51	SW 12	10.00	Fair	CLR	53	37			55%	NA	NA	29.71	1006.5	
25	12:51	S 13	10.00	Fair	CLR	51	37	51	40	59%	NA	NA	29.71	1006.3	
25	11:51	SW 14	10.00	Fair	CLR	49	37			64%	44	NA	29.73	1007.0	
25	10:51	SW 14	10.00	Fair	CLR	47	36			66%	41	NA	29.73	1007.2	
25	09:51	S 15	10.00	Overcast	OVC110	43	35			74%	36	NA	29.74	1007.4	
25	08:51	S 13	8.00	Overcast	OVC120	41	35			79%	34	NA	29.71	1006.7	
25	07:51	S 14 G 23	6.00	Overcast with Haze	OVC090	40	35			83%	32	NA	29.72	1006.8	

11/27/2019

National Weather Service : Observed Weather for past 3 Days : Erie, Erie International Airport

25	06:51	S 13	6.00	Fog/Mist	BKN060 OVC090	40	36	42	40	86%	32	NA	29.72	1006.8	0.02	0.04
25	05:51	S 12	6.00	Light Rain	SCT017 OVC046	41	36			82%	34	NA	29.73	1007.4	0.01	
25	04:51	S 10	7.00	Light Rain	BKN016 OVC046	41	36			82%	35	NA	29.73	1007.2	0.01	
25	03:51	S 7	8.00	Overcast	OVC016	41	35			79%	36	NA	29.71	1006.6		
25	02:51	SW 10	9.00	Overcast	SCT016 OVC100	41	34			76%	35	NA	29.71	1006.3		
25	01:51	S 10	9.00	Overcast	OVC015	41	34			76%	35	NA	29.69	1005.8		
25	00:51	S 13	10.00	Overcast	OVC015	41	34	41	37	76%	34	NA	29.69	1005.7		
24	23:51	SW 15	10.00	Overcast	OVC017	41	34			76%	33	NA	29.68	1005.6		
24	22:51	S 12	10.00	Overcast	OVC019	41	33			73%	34	NA	29.68	1005.6		
24	21:51	SW 13	10.00	Overcast	OVC020	40	32			73%	32	NA	29.68	1005.6		
24	20:51	SW 9	10.00	Mostly Cloudy	BKN023	39	32			76%	33	NA	29.66	1005.0		
24	19:51	SW 9	10.00	Fair	CLR	38	30			73%	32	NA	29.65	1004.6		
24	18:51	SW 8	10.00	Fair	CLR	38	29	41	38	70%	32	NA	29.63	1003.8		
24	17:51	S 9	10.00	Fair	CLR	39	30			70%	33	NA	29.61	1003.1		
24	16:51	S 9	8.00	Fair	CLR	39	30			70%	33	NA	29.60	1002.8		
24	15:51	SW 9	8.00	Partly Cloudy	SCT022	40	31			70%	34	NA	29.60	1002.7		
24	14:51	SW 13 G 20	7.00	Overcast	OVC016	40	31			70%	32	NA	29.60	1002.8		
24	13:51	SW 13	7.00	Overcast	OVC015	40	31			70%	32	NA	29.60	1003.0		

Date	Time (est)	Wind (mph)	Vis. (mi.)	Weather	Sky Cond.	Air	Dwpt	Max.	Min.	Relative Humidity	Wind Chill (°F)	Heat Index (°F)	altimeter (in.)	sea level (mb)	Precipitation (in.)		
						Temperature (°F)									1 hr	3 hr	6 hr

National Weather Service  
Southern Region Headquarters  
Fort Worth, Texas  
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[Back to previous page](#)

Last Modified: February, 7 2012  
[Privacy Policy](#)

## Calibration Certificate No.42925

**Instrument:** Acoustical Calibrator  
**Model:** NC-74  
**Manufacturer:** Rion  
**Serial number:** 34557100  
**Class (IEC 60942):** 1  
**Barometer type:**  
**Barometer s/n:**  
**Customer:** MS Consultants, Inc.  
**Tel/Fax:** 330-258-9920 / 330-258-9921

**Date Calibrated:** 5/22/2019 **Cal Due:**  
**Status:**

Received	Sent
X	X

  
**In tolerance:**

X	X
---	---

  
**Out of tolerance:**

--	--

  
**See comments:**

--	--

  
**Contains non-accredited tests:**    Yes    X    No  
**Address:** One Cascade Plaza, Suite 140,  
Akron, OH 44308-1116

**Tested in accordance with the following procedures and standards:**  
Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

**Instrumentation used for calibration:** Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence	Cal. Due
				Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2018	Scantek, Inc./ NVLAP	Oct 31, 2019
DS-360-SRS	Function Generator	33584	Oct 24, 2017	ACR Env./ A2LA	Oct 24, 2019
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 1, 2018	ACR Env. / A2LA	Oct 1, 2019
HM30-Thommen	Meteo Station	1040170/39633	Nov 13, 2018	ACR Env./ A2LA	Nov 13, 2019
140-Norsonic	Real Time Analyzer	1406423	Nov 3, 2018	Scantek / NVLAP	Nov 3, 2019
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
4134-Brüel&Kjær	Microphone	173368	Nov 11, 2018	Scantek, Inc. / NVLAP	Nov 11, 2019
1203-Norsonic	Preamplifier	14059	Feb 28, 2019	Scantek, Inc./ NVLAP	Feb 28, 2020

**Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)**

<b>Calibrated by:</b>	Lydon Dawkins	<b>Authorized signatory:</b>	Steven E. Marshall
Signature	<i>Lydon Dawkins</i>	Signature	<i>Steven E. Marshall</i>
Date	5/22/2019	Date	5/23/2019

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.  
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.



**Results summary:** Device was tested and complies with following clauses of mentioned specifications:

CLAUSES <sup>1</sup> FROM STANDARDS REFERENCED IN PROCEDURES:	MET <sup>2</sup>	NOT MET	COMMENTS
<b>Manufacturer specifications</b>			
Manufacturer specifications: Sound pressure level	X		
Manufacturer specifications: Frequency	X		
Manufacturer specifications: Total harmonic distortion	X		
<b>Current standards</b>			
ANSI S1.40:2006 B.3 / IEC 60942: 2003 B.2 - Preliminary inspection	X		
ANSI S1.40:2006 B.4.4 / IEC 60942: 2003 B.3.4 - Sound pressure level	X		
ANSI S1.40:2006 A.5.4 / IEC 60942: 2003 A.4.4 - Sound pressure level stability	-	-	
ANSI S1.40:2006 B.4.5 / IEC 60942: 2003 B.3.5 - Frequency	X		
ANSI S1.40:2006 B.4.6 / IEC 60942: 2003 B.3.6 - Total harmonic distortion	X		

<sup>1</sup> The results of this calibration apply only to the instrument type with serial number identified in this report.

<sup>2</sup> The tests marked with (\*) are not covered by the current NVLAP accreditation.

**Main measured parameters <sup>3</sup>:**

Measured <sup>4</sup> /Acceptable <sup>5</sup> Tone frequency (Hz):	Measured <sup>4</sup> /Acceptable <sup>5</sup> Total Harmonic Distortion (%):	Measured <sup>4</sup> /Acceptable Level <sup>5</sup> (dB):
1001.78 ± 1.0/1000.0 ± 10.0	1.20 ± 0.10/ < 3	94.00 ± 0.12/94.0 ± 0.4

<sup>3</sup> The stated level is valid at measurement conditions.

<sup>4</sup> The above expanded uncertainties for frequency and distortion are calculated with a coverage factor k=2; for level k=2.00

<sup>5</sup> Acceptable parameters values are from the current standards

**Environmental conditions:**

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.3 ± 1.1	100.98 ± 0.000	42.7 ± 2.2

**Tests made with following attachments to instrument:**

Calibrator ½" Adaptor Type: NC-74-002
Other:

**Adjustments:** Unit was not adjusted.

**Comments:** The instrument was tested and met all specifications found in the referenced procedures.

*Note:* The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.

Compliance with any standard cannot be claimed based solely on the periodic tests.

**Measured Data:** in Acoustical Calibrator Test Report # 42925 of one page.

**Place of Calibration: Scantek, Inc.**

6430 Dobbin Road, Suite C  
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167  
[callab@scantekinc.com](mailto:callab@scantekinc.com)

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory. This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Document stored as: Z:\Calibration Lab\Cal 2019\RIONNC74-0.5in\_34557100\_M1.doc

Page 2 of 2

# Test Report No.:42925

**Manufacturer:** Rion  
**Type:** NC-74  
**Serial no:** 34557100

**Customer:** MS Consultants, Inc.  
**Department:**  
**Address:** One Cascade Plaza, Suite 140, Akron, OH 44308-1116  
**Order No:**  
**Contact Person:** Vincent Matheney  
**Phone No.:** 330-258-9920  
**Fax No.:** 330-258-9921  
**eMail:** vmatheney@msconsultants.com

## Measurement Results:

	Level:	P. Stab :	Frequency:	F. Stab :	Distortion:
	(dB)	(dB)	(Hz)	(%)	(% TD)
1:	94.01	0.02	1001.79	0.00	1.21
2:	94.00	0.03	1001.79	0.00	1.21
3:	94.00	0.01	1001.77	0.01	1.19
<b>Result (Average):</b>	<b>94.00</b>	<b>0.02</b>	<b>1001.78</b>	<b>0.00</b>	<b>1.20</b>
Expanded Uncertainty:	0.12	0.02	1.00	0.01	0.10
Degree of Freedom:	>100	32	>100	>100	>100
Coverage Factor:	2.00	2.13	2.00	2.00	2.00

The stated levels are relative to 20 $\mu$ Pa.

The stated level is valid at measurement conditions.

Reference microphone: 4134-173368. Volume correction: 0.006 dB

Records:Z:\Calibration Lab\Cal 2019\RIONNC74-0.5in\_34557100\_M1.nmf

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA publication EA-4/02.

## Environmental conditions:

**Pressure:** 100.980  $\pm$  0.020 kPa  
**Temperature:** 23.3  $\pm$  1.1  $^{\circ}$ C  
**Relative humidity:** 42.7  $\pm$  2.2 %RH

Date of calibration: 5/22/2019

Date of issue: 5/22/2019

Supervisor : Steven E. Marshall  
Measurements performed by:

LD

Lydon Dawkins  
Software version: 6.1T

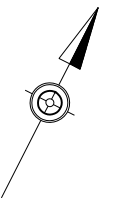
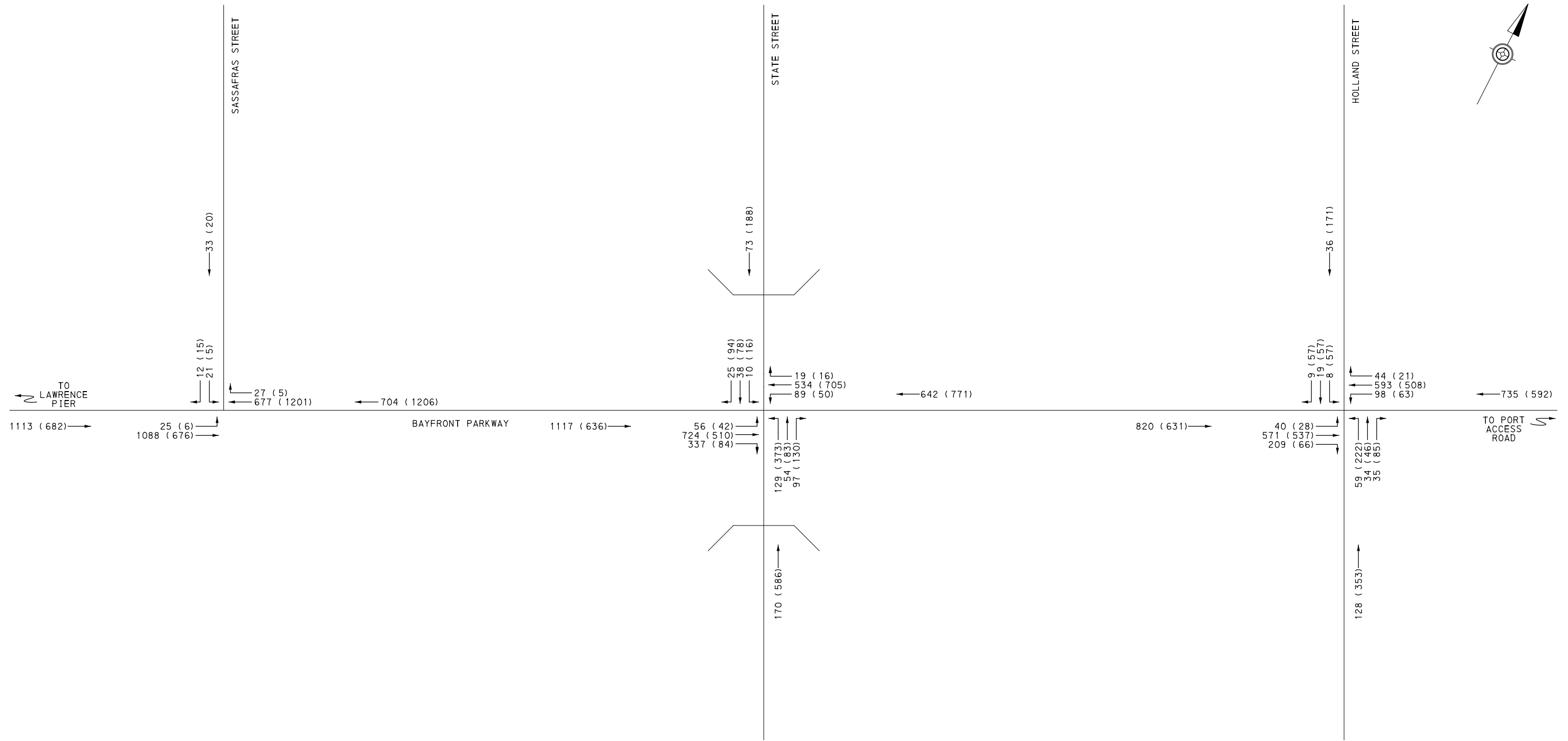
**Scantek, Inc.**

6430 Dobbin Rd., Suite C, Columbia, MD 21045  
Ph: 410-290-7726 eMail: callab@scantekinc.com

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

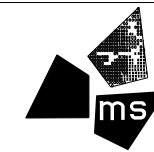
### Appendix 2

#### Traffic Data



PENNDOT DISTRICT 1-0

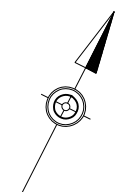
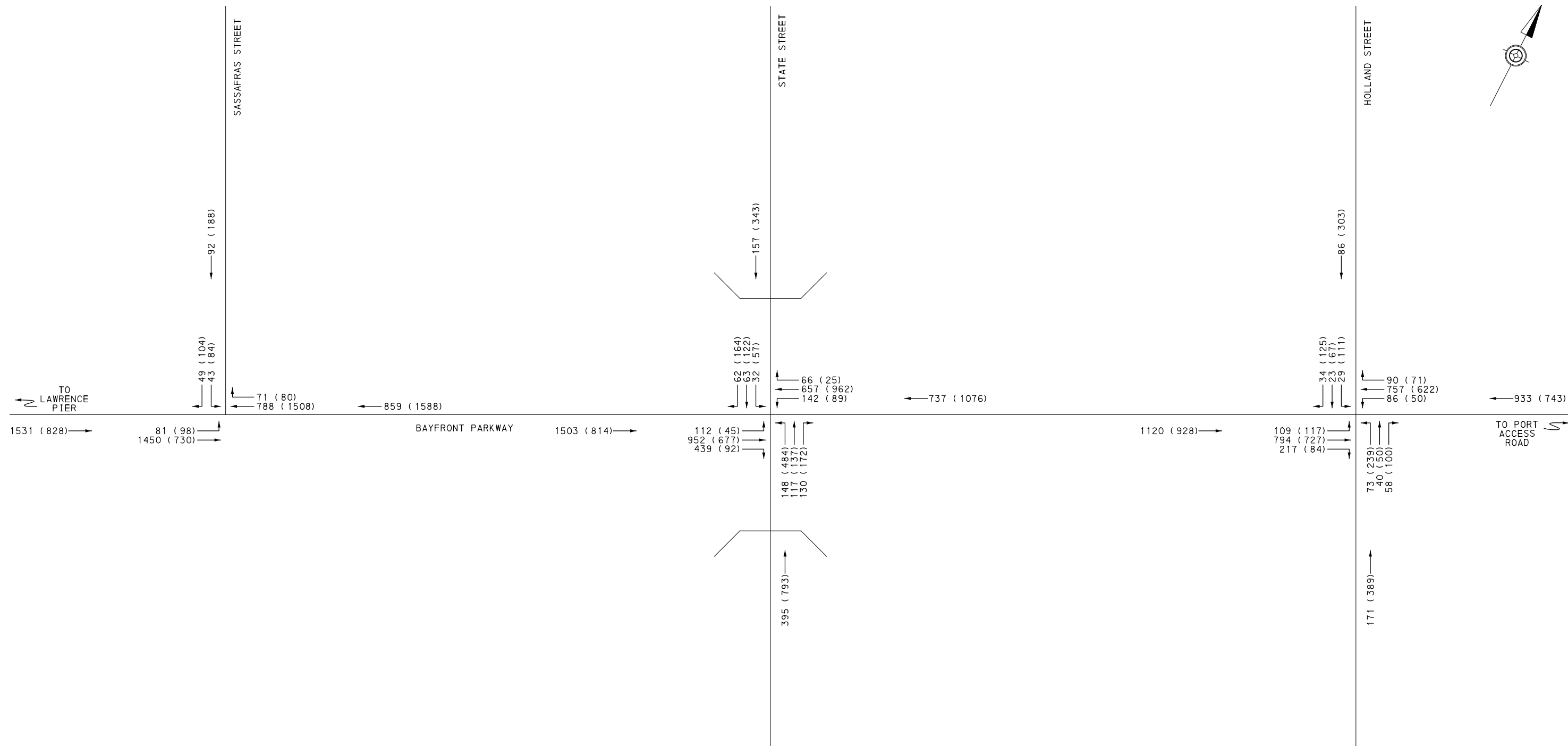
ERIE BAYFRONT PARKWAY



PREPARED BY:  
ms consultants, inc.

EXISTING YEAR 2018  
PEAK HOUR  
TRAFFIC VOLUMES

EXHIBIT 1



**LEGEND**

X = AM PEAK HOUR VOLUME  
 (X) = PM PEAK HOUR VOLUME

SCALE: NOT TO SCALE

**PENNDOT DISTRICT 1-0**

**ERIE BAYFRONT PARKWAY**



PREPARED BY:  
 ms consultants, inc.

DESIGN YEAR 2040  
 PEAK HOUR TRAFFIC  
 VOLUMES WITH ALL  
 DEVELOPMENT

**EXHIBIT 2**

SR 4034 Section A01

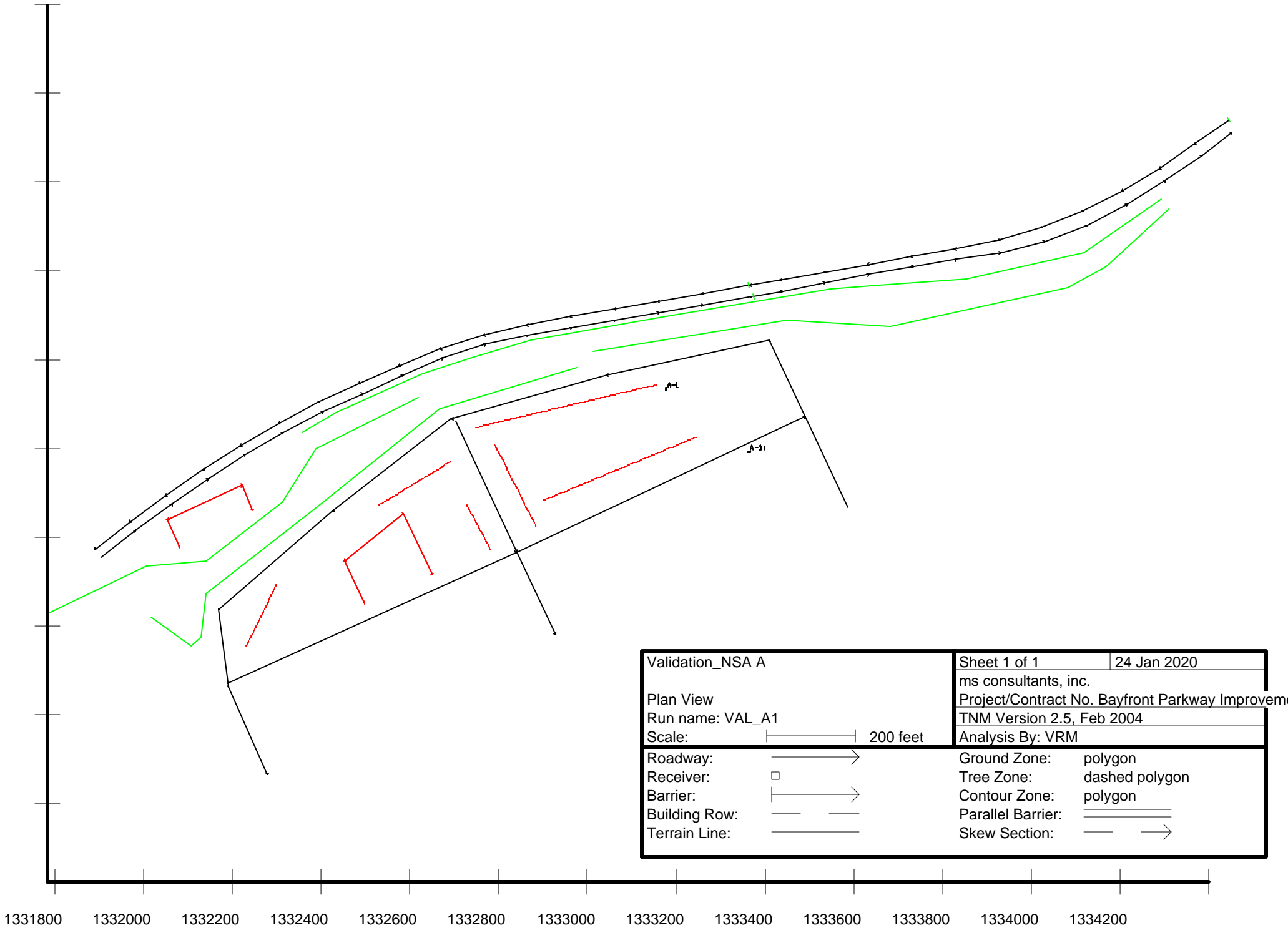
Traffic Data Information:









<b>Roadway</b>	<b>Current ADT</b>	<b>Posted Speed (MPH)</b>	<b>K</b>	<b>D</b>	<b>T</b>	<b>Design Year ADT</b>	<b>DHV</b>
SR 4034	19,039	35	10	64	2	19,700	1,970
State St	13,400	25	10	62	4	13,900	1,390
Holland St	5,400	25	10	65	4	5,600	560
Sassafras St	900	25	10	61	4	1,000	100
Front St	1,700	25	10	52	9	1,800	180

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Appendix 3

#### TNM Validation Models



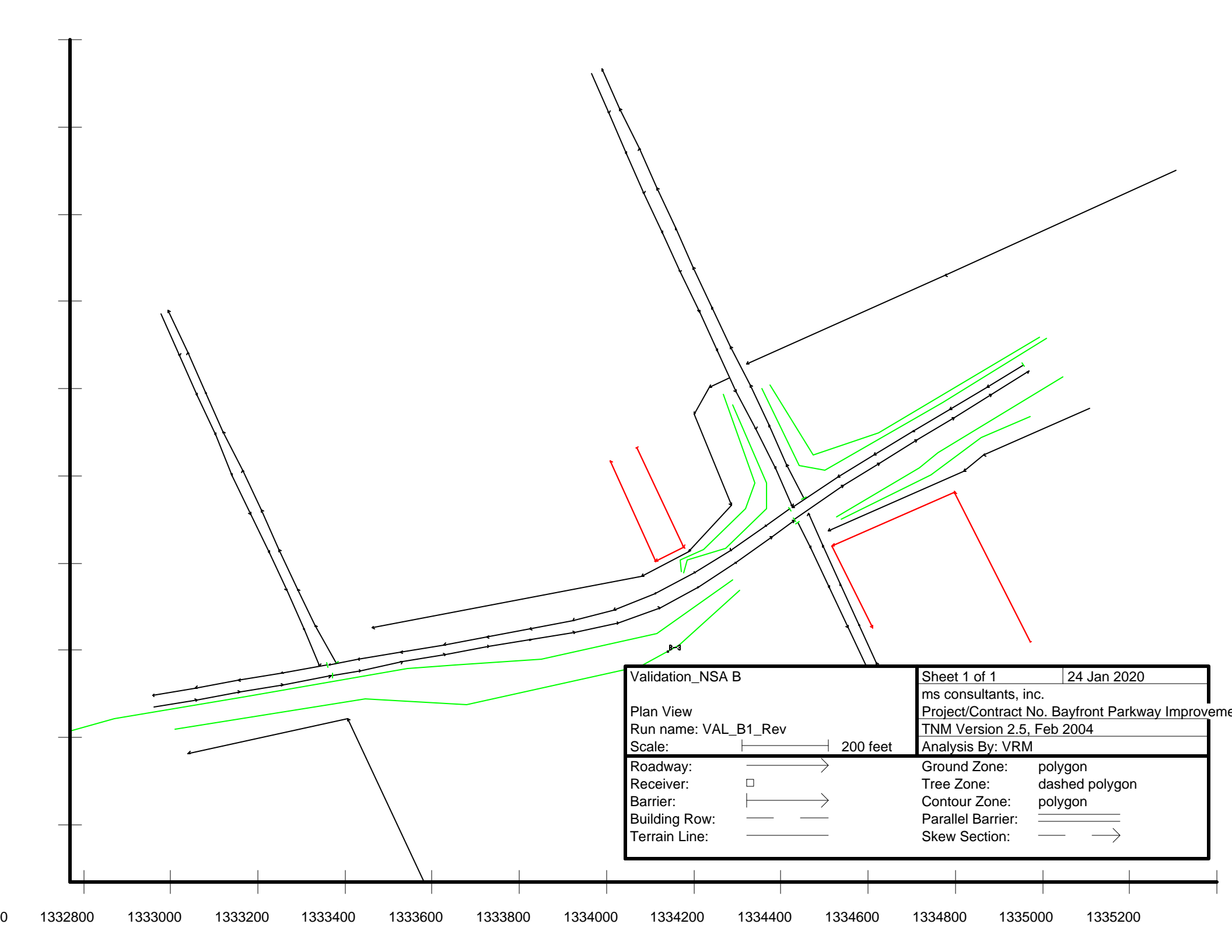
Validation_NSA A		Sheet 1 of 1	24 Jan 2020
Plan View		ms consultants, inc.	
Run name: VAL_A1		Project/Contract No. Bayfront Parkway Improvement	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: VRM	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	











**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

ms consultants, inc.						24 January 2020						
VRM						TNM 2.5						
						Calculated with TNM 2.5						
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		Bayfront Parkway Improvements										
<b>RUN:</b>		Validation_NSA A										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS					Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing</b>		<b>Type Impact</b>	<b>With Barrier</b>			
						<b>Calculated</b>	<b>Crit'n</b>		<b>Calculated LAeq1h</b>	<b>Noise Reduction</b>		<b>Calculated minus Goal</b>
							<b>Sub'l Inc</b>			<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
A-1	17	1	49.0	49.5	66	0.5	10	----	49.5	0.0	5	-5.0
A-1ii	61	1	48.0	47.4	66	-0.6	10	----	47.4	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		2	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							

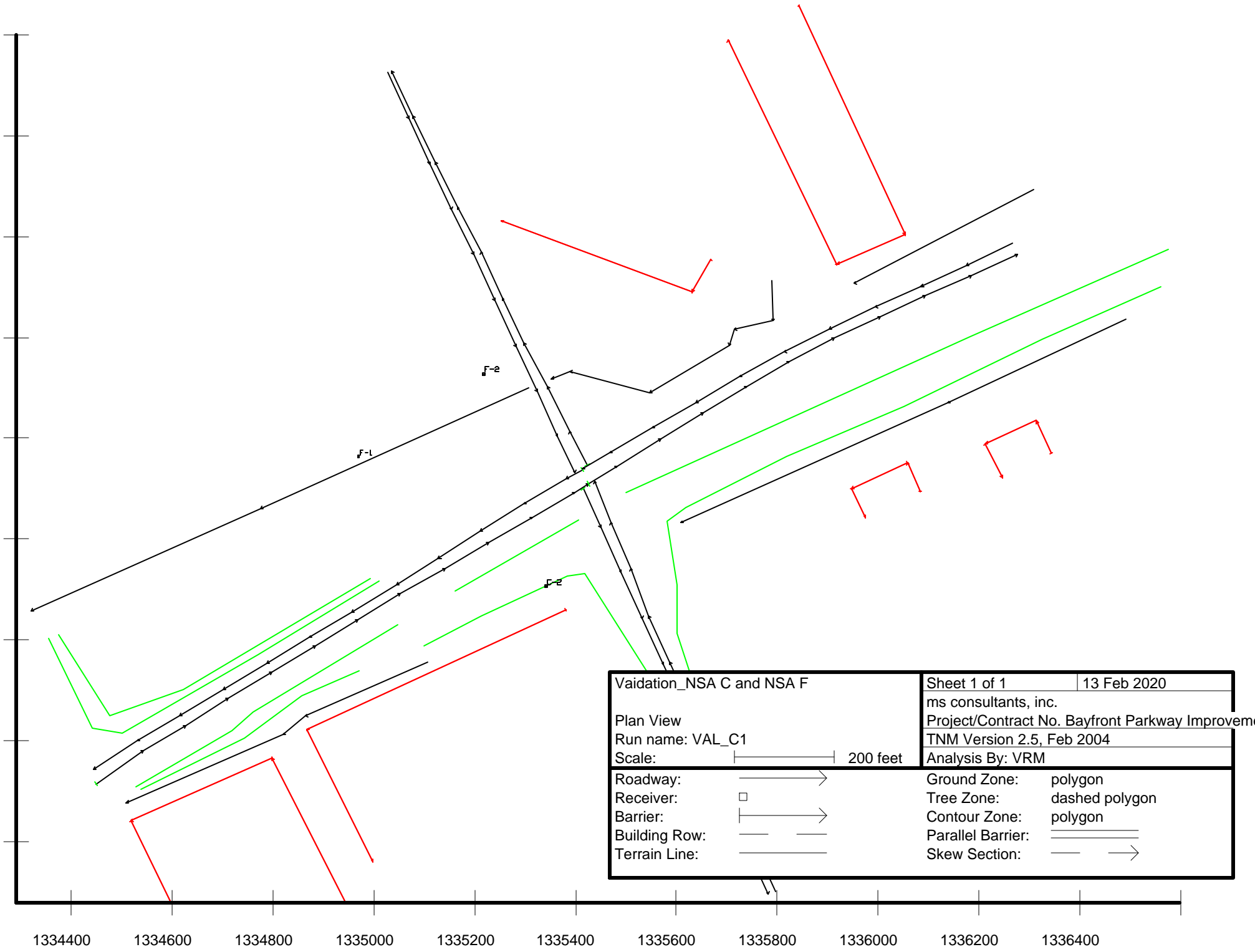










Validation_NSA B		Sheet 1 of 1	24 Jan 2020
Plan View		ms consultants, inc.	
Run name: VAL_B1_Rev		Project/Contract No. Bayfront Parkway Improvement	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: VRM	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

ms consultants, inc.										24 January 2020			
VRM										TNM 2.5			
										Calculated with TNM 2.5			
<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>		Bayfront Parkway Improvements											
<b>RUN:</b>		Validation_NSA B											
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS										Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.	
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH											
<b>Receiver</b>													
<b>Name</b>		<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing</b>		<b>With Barrier</b>				
							<b>Calculated</b>	<b>Crit'n</b>	<b>Type Impact</b>	<b>Calculated LAeq1h</b>	<b>Noise Reduction</b>		<b>Calculated minus Goal</b>
				dB	dB	dB	dB	dB		dB	dB	dB	dB
B-3		66	1	66.1	66.0	66	-0.1	10	Snd Lvl	66.0	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>										
			<b>Min</b>	<b>Avg</b>	<b>Max</b>								
			<b>dB</b>	<b>dB</b>	<b>dB</b>								
All Selected		1	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

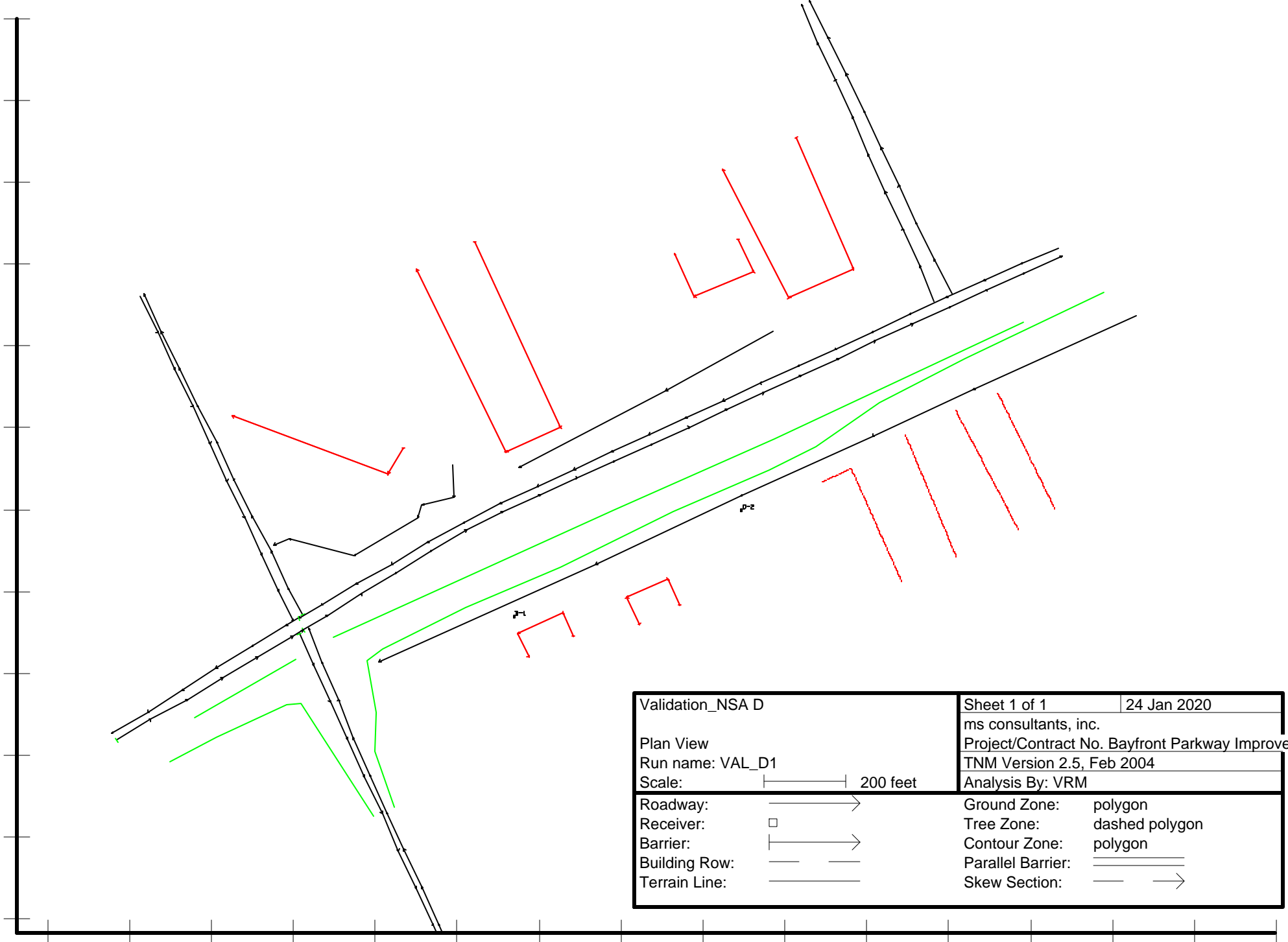


Validation_NSA C and NSA F		Sheet 1 of 1	13 Feb 2020
Plan View		ms consultants, inc.	
Run name: VAL_C1		Project/Contract No. Bayfront Parkway Improvement	
Scale:  200 feet		TNM Version 2.5, Feb 2004	
Analysis By: VRM			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	









**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

ms consultants, inc.						13 February 2020						
VRM						TNM 2.5						
						Calculated with TNM 2.5						
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>			Bayfront Parkway Improvements									
<b>RUN:</b>			Validation_NSA C and NSA F									
<b>BARRIER DESIGN:</b>			INPUT HEIGHTS			Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
<b>ATMOSPHERICS:</b>			68 deg F, 50% RH									
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing Calculated</b>	<b>Crit'n</b>	<b>Type Impact</b>	<b>With Barrier Calculated LAeq1h</b>	<b>Noise Reduction</b>		
							<b>Sub'l Inc</b>			<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
C-2	69	1	64.9	64.3	66	-0.6	10	----	64.3	0.0	5	-5.0
F-1	173	1	60.1	57.3	66	-2.8	10	----	57.3	0.0	5	-5.0
F-2	174	1	57.1	58.1	66	1.0	10	----	58.1	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			dB	dB	dB							
All Selected		3	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							



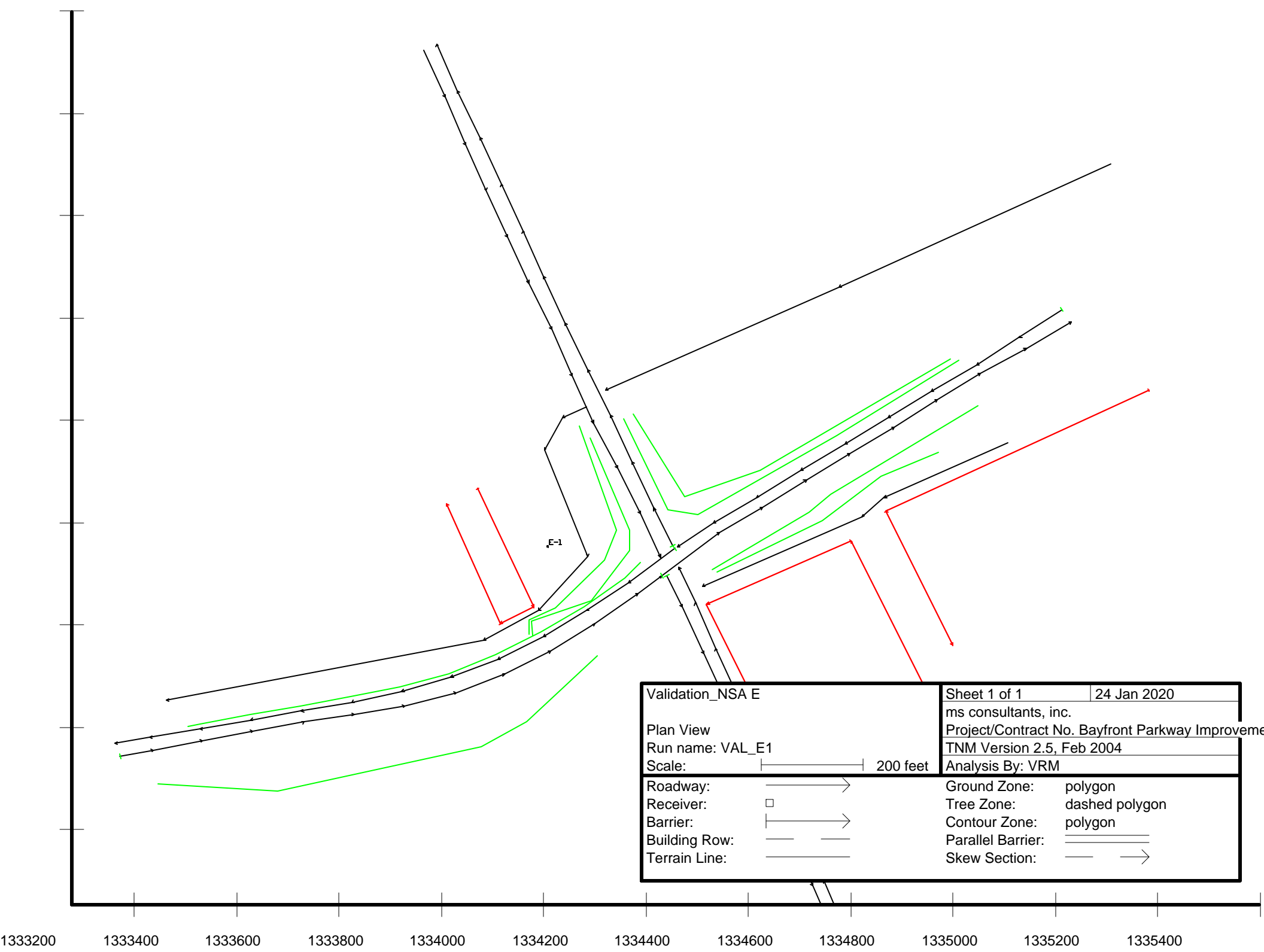
600 1334800 1335000 1335200 1335400 1335600 1335800 1336000 1336200 1336400 1336600 1336800 1337000 1337200 1337400 1337600

Validation_NSA D		Sheet 1 of 1	24 Jan 2020
Plan View		ms consultants, inc.	
Run name: VAL_D1		Project/Contract No. Bayfront Parkway Improvement	
Scale: 		TNM Version 2.5, Feb 2004	
Analysis By: VRM			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	









**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

ms consultants, inc.						24 January 2020						
VRM						TNM 2.5						
						Calculated with TNM 2.5						
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		Bayfront Parkway Improvements										
<b>RUN:</b>		Validation_NSA D										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS					Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing</b>		<b>Type Impact</b>	<b>With Barrier</b>			
						<b>Calculated</b>	<b>Crit'n</b>		<b>Calculated LAeq1h</b>	<b>Noise Reduction</b>		<b>Calculated minus Goal</b>
							<b>Sub'l Inc</b>			<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
D-1	74	1	55.3	55.7	66	0.4	10	----	55.7	0.0	5	-5.0
D-2	75	1	56.9	56.0	66	-0.9	10	----	56.0	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		2	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							



E-1

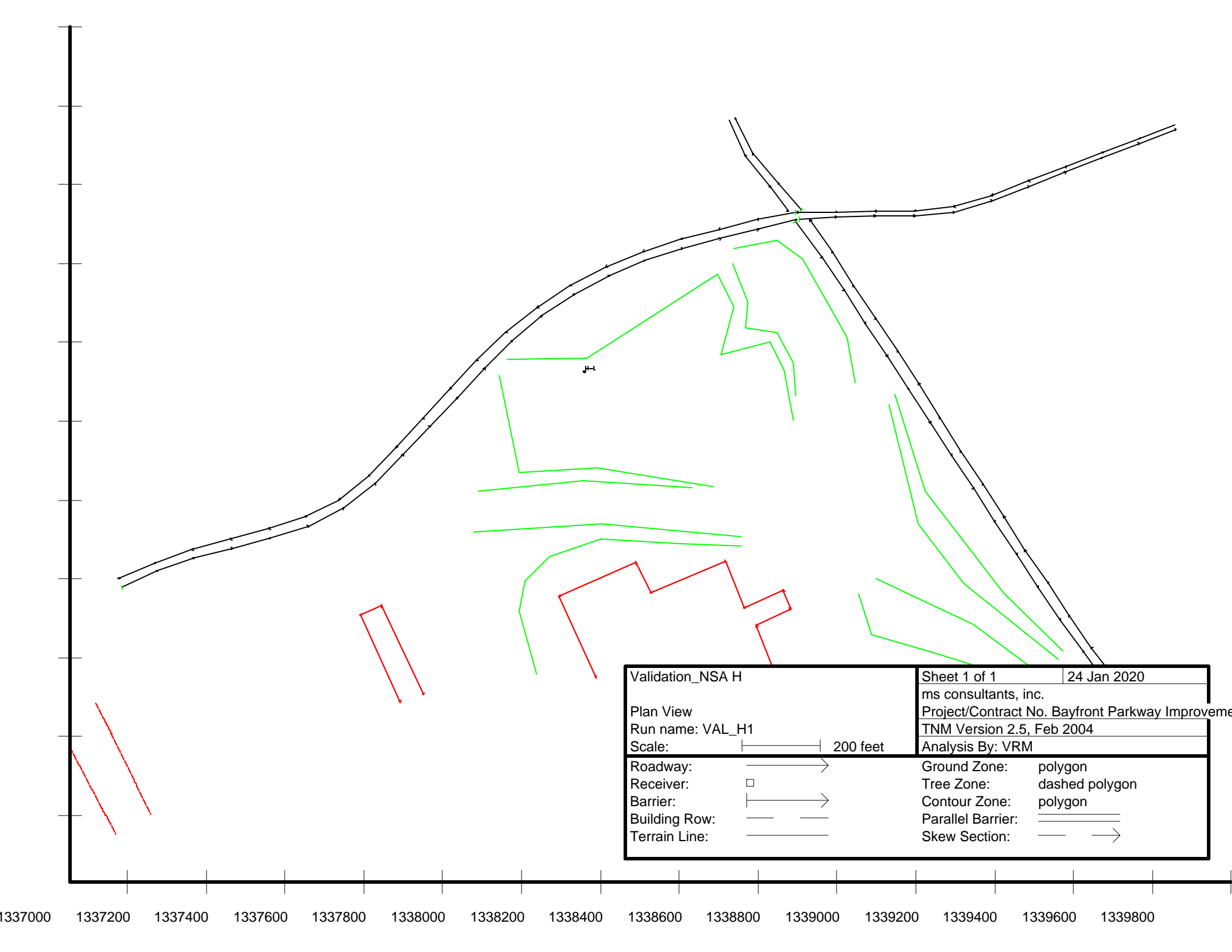
Validation_NSA E		Sheet 1 of 1	24 Jan 2020
Plan View		ms consultants, inc.	
Run name: VAL_E1		Project/Contract No. Bayfront Parkway Improvement	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: VRM	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	











**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

ms consultants, inc.													24 January 2020	
VRM													TNM 2.5	
													Calculated with TNM 2.5	
<b>RESULTS: SOUND LEVELS</b>														
<b>PROJECT/CONTRACT:</b>			Bayfront Parkway Improvements											
<b>RUN:</b>			Validation_NSA E											
<b>BARRIER DESIGN:</b>			INPUT HEIGHTS											
<b>ATMOSPHERICS:</b>			68 deg F, 50% RH											
<b>Receiver</b>														
<b>Name</b>		<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing</b>		<b>With Barrier</b>					
							<b>Calculated</b>	<b>Crit'n</b>	<b>Type Impact</b>	<b>Calculated LAeq1h</b>	<b>Noise Reduction</b>		<b>Calculated minus Goal</b>	
				dB	dB	dB	dB	dB		dB	dB	dB	dB	
E-1		155	1	55.9	56.7	66	0.8	10	----	56.7	0.0	5	-5.0	
<b>Dwelling Units</b>			<b># DUs</b>	<b>Noise Reduction</b>										
				<b>Min</b>	<b>Avg</b>	<b>Max</b>								
				<b>dB</b>	<b>dB</b>	<b>dB</b>								
All Selected			1	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								



Validation_NSA H		Sheet 1 of 1	24 Jan 2020
Plan View		ms consultants, inc.	
Run name: VAL_H1		Project/Contract No. Bayfront Parkway Improvement	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: VRM	
Roadway:		Ground Zone:	polyline
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polyline
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

**RESULTS: SOUND LEVELS**

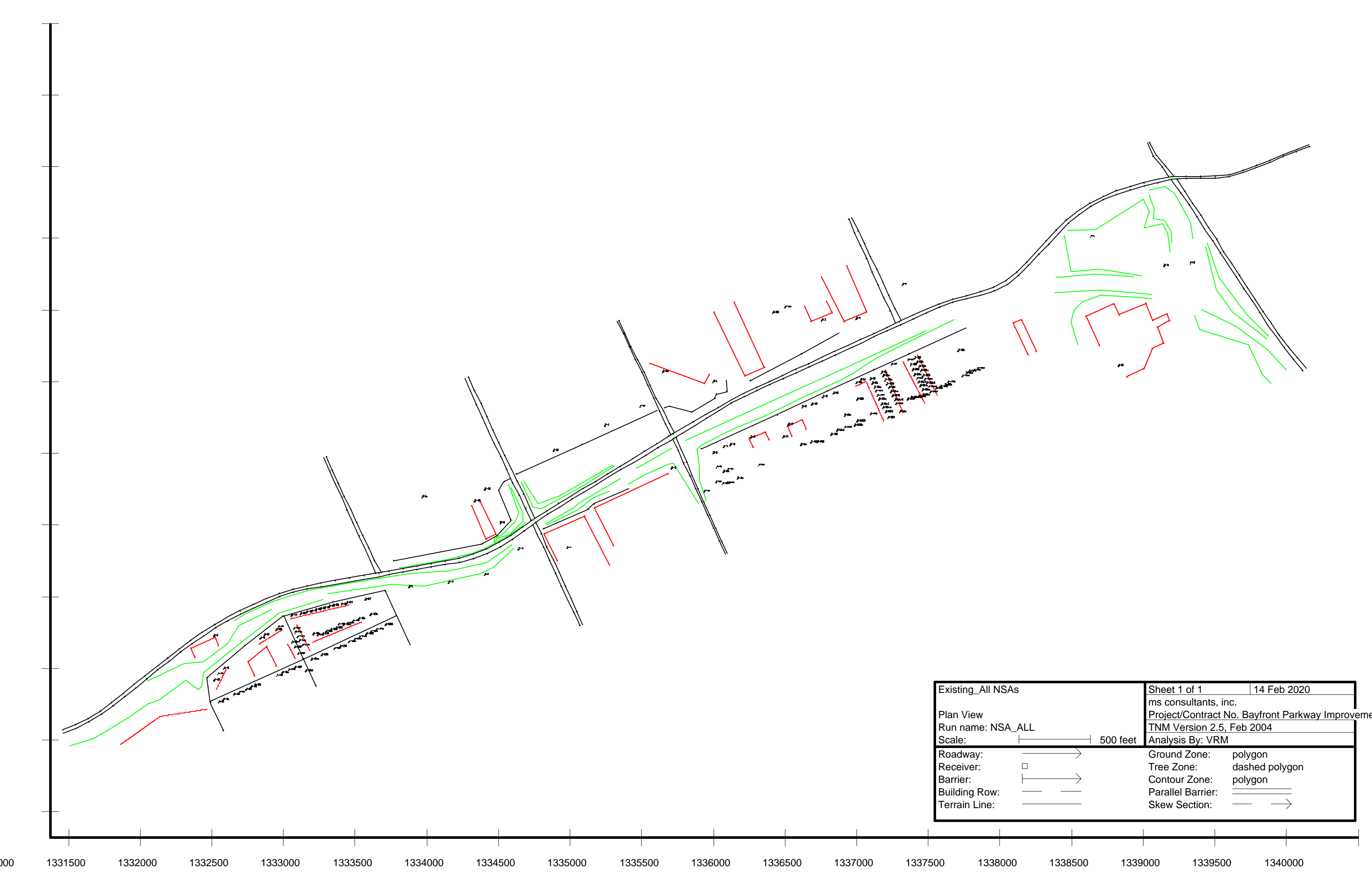
**Bayfront Parkway Improvements**

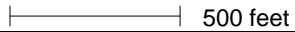







ms consultants, inc.													24 January 2020	
VRM													TNM 2.5	
													Calculated with TNM 2.5	
<b>RESULTS: SOUND LEVELS</b>														
<b>PROJECT/CONTRACT:</b>			Bayfront Parkway Improvements											
<b>RUN:</b>			Validation_NSA H											
<b>BARRIER DESIGN:</b>			INPUT HEIGHTS											
<b>ATMOSPHERICS:</b>			68 deg F, 50% RH											
<b>Receiver</b>														
<b>Name</b>		<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h Calculated</b>	<b>Crit'n</b>	<b>Increase over existing</b>		<b>With Barrier</b>					
							<b>Calculated</b>	<b>Crit'n</b>	<b>Type Impact</b>	<b>Calculated LAeq1h</b>	<b>Noise Reduction</b>		<b>Calculated minus Goal</b>	
								<b>Sub'l Inc</b>			<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>	
				dB	dB	dB	dB	dB		dB	dB	dB	dB	
H-1		168	1	56.5	57.0	66	0.5	10	----	57.0	0.0	5	-5.0	
<b>Dwelling Units</b>			<b># DUs</b>	<b>Noise Reduction</b>										
				<b>Min</b>	<b>Avg</b>	<b>Max</b>								
				<b>dB</b>	<b>dB</b>	<b>dB</b>								
All Selected			1	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								

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Appendix 4

#### TNM Existing Conditions Models



Existing_All NSAs		Sheet 1 of 1	14 Feb 2020
Plan View		ms consultants, inc.	
Run name: NSA_ALL		Project/Contract No. Bayfront Parkway Improvement	
Scale:  500 feet		TNM Version 2.5, Feb 2004	
		Analysis By: VRM	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

RESULTS: SOUND LEVELS

Bayfront Parkway Improvements

ms consultants, inc.																	14 February 2020			
VRM																	TNM 2.5			
																	Calculated with TNM 2.5			
RESULTS: SOUND LEVELS																				
PROJECT/CONTRACT:			Bayfront Parkway Improvements																	
RUN:			Existing_All NSAs																	
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	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
Name			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
A-4	1	1	0.0	65.6	66	65.6	10	----	65.6	0.0	5	-5.0
A-9	2	1	0.0	46.5	66	46.5	10	----	46.5	0.0	5	-5.0
A-10	3	1	0.0	46.7	66	46.7	10	----	46.7	0.0	5	-5.0
A-12	4	1	0.0	46.2	66	46.2	10	----	46.2	0.0	5	-5.0
A-13	5	1	0.0	46.5	66	46.5	10	----	46.5	0.0	5	-5.0
A-14	6	1	0.0	49.1	66	49.1	10	----	49.1	0.0	5	-5.0
A-15	7	1	0.0	49.5	66	49.5	10	----	49.5	0.0	5	-5.0
A-16	8	1	0.0	49.3	66	49.3	10	----	49.3	0.0	5	-5.0
A-17	9	1	0.0	49.6	66	49.6	10	----	49.6	0.0	5	-5.0
A-18	10	1	0.0	50.3	66	50.3	10	----	50.3	0.0	5	-5.0
A-19	11	1	0.0	51.4	66	51.4	10	----	51.4	0.0	5	-5.0
A-20	12	1	0.0	51.2	66	51.2	10	----	51.2	0.0	5	-5.0
A-21	13	1	0.0	51.7	66	51.7	10	----	51.7	0.0	5	-5.0
A-22	14	1	0.0	51.9	66	51.9	10	----	51.9	0.0	5	-5.0
A-23	15	1	0.0	51.6	66	51.6	10	----	51.6	0.0	5	-5.0
A-24	16	1	0.0	52.5	66	52.5	10	----	52.5	0.0	5	-5.0
A-27	17	1	0.0	53.9	66	53.9	10	----	53.9	0.0	5	-5.0
A-2ii	18	1	0.0	45.2	66	45.2	10	----	45.2	0.0	5	-5.0
A-1iii	19	1	0.0	40.7	66	40.7	10	----	40.7	0.0	5	-5.0
A-2iii	20	1	0.0	40.4	66	40.4	10	----	40.4	0.0	5	-5.0
A-3ii	21	1	0.0	45.3	66	45.3	10	----	45.3	0.0	5	-5.0
A-4ii	22	1	0.0	45.4	66	45.4	10	----	45.4	0.0	5	-5.0
A-4iii	23	1	0.0	40.4	66	40.4	10	----	40.4	0.0	5	-5.0
A-5iii	24	1	0.0	40.6	66	40.6	10	----	40.6	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

A-6iii	25	1	0.0	40.5	66	40.5	10	----	40.5	0.0	5	-5.0
A-7iii	26	1	0.0	40.2	66	40.2	10	----	40.2	0.0	5	-5.0
A-8iii	27	1	0.0	40.1	66	40.1	10	----	40.1	0.0	5	-5.0
A-9iii	28	1	0.0	39.6	66	39.6	10	----	39.6	0.0	5	-5.0
A-10iii	29	1	0.0	40.8	66	40.8	10	----	40.8	0.0	5	-5.0
A-11iii	30	1	0.0	41.3	66	41.3	10	----	41.3	0.0	5	-5.0
A-13ii	31	1	0.0	42.4	66	42.4	10	----	42.4	0.0	5	-5.0
A-13iii	32	1	0.0	41.7	66	41.7	10	----	41.7	0.0	5	-5.0
A-13iv	33	1	0.0	39.9	66	39.9	10	----	39.9	0.0	5	-5.0
A-13v	34	1	0.0	42.0	66	42.0	10	----	42.0	0.0	5	-5.0
A-13vi	35	1	0.0	42.1	66	42.1	10	----	42.1	0.0	5	-5.0
A-14ii	36	1	0.0	44.2	66	44.2	10	----	44.2	0.0	5	-5.0
A-14iii	37	1	0.0	43.6	66	43.6	10	----	43.6	0.0	5	-5.0
A-14iv	38	1	0.0	43.1	66	43.1	10	----	43.1	0.0	5	-5.0
A-14v	39	1	0.0	42.4	66	42.4	10	----	42.4	0.0	5	-5.0
A-14vi	40	1	0.0	42.1	66	42.1	10	----	42.1	0.0	5	-5.0
A-14vii	41	1	0.0	41.7	66	41.7	10	----	41.7	0.0	5	-5.0
A-15ii	42	1	0.0	44.5	66	44.5	10	----	44.5	0.0	5	-5.0
A-15iii	43	1	0.0	42.3	66	42.3	10	----	42.3	0.0	5	-5.0
A-16ii	44	1	0.0	44.5	66	44.5	10	----	44.5	0.0	5	-5.0
A-17ii	45	1	0.0	44.9	66	44.9	10	----	44.9	0.0	5	-5.0
A-18ii	46	1	0.0	45.3	66	45.3	10	----	45.3	0.0	5	-5.0
A-18iii	47	1	0.0	42.8	66	42.8	10	----	42.8	0.0	5	-5.0
A-19ii	48	1	0.0	45.7	66	45.7	10	----	45.7	0.0	5	-5.0
A-19iii	49	1	0.0	42.9	66	42.9	10	----	42.9	0.0	5	-5.0
A-20ii	50	1	0.0	46.0	66	46.0	10	----	46.0	0.0	5	-5.0
A-21ii	51	1	0.0	46.3	66	46.3	10	----	46.3	0.0	5	-5.0
A-21iii	52	1	0.0	43.7	66	43.7	10	----	43.7	0.0	5	-5.0
A-22ii	53	1	0.0	46.4	66	46.4	10	----	46.4	0.0	5	-5.0
A-23ii	54	1	0.0	46.7	66	46.7	10	----	46.7	0.0	5	-5.0
A-23iii	55	1	0.0	44.2	66	44.2	10	----	44.2	0.0	5	-5.0
A-24ii	56	1	0.0	47.2	66	47.2	10	----	47.2	0.0	5	-5.0
A-24iii	57	1	0.0	45.1	66	45.1	10	----	45.1	0.0	5	-5.0
A-25ii	58	1	0.0	47.8	66	47.8	10	----	47.8	0.0	5	-5.0
A-25iii	59	1	0.0	45.7	66	45.7	10	----	45.7	0.0	5	-5.0
A-26iii	60	1	0.0	46.0	66	46.0	10	----	46.0	0.0	5	-5.0
A-27ii	61	1	0.0	49.2	66	49.2	10	----	49.2	0.0	5	-5.0
A-27iii	62	1	0.0	46.8	66	46.8	10	----	46.8	0.0	5	-5.0
A-28iii	63	1	0.0	47.4	66	47.4	10	----	47.4	0.0	5	-5.0
B-1	64	1	0.0	60.8	66	60.8	10	----	60.8	0.0	5	-5.0
B-2	65	1	0.0	56.4	66	56.4	10	----	56.4	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

B-3	66	1	0.0	60.0	66	60.0	10	----	60.0	0.0	5	-5.0
B-4	67	1	0.0	64.1	66	64.1	10	----	64.1	0.0	5	-5.0
C-1	68	1	0.0	50.8	66	50.8	10	----	50.8	0.0	5	-5.0
C-2	69	1	0.0	60.5	66	60.5	10	----	60.5	0.0	5	-5.0
D-3	70	1	0.0	54.5	66	54.5	10	----	54.5	0.0	5	-5.0
D-4	71	1	0.0	54.4	66	54.4	10	----	54.4	0.0	5	-5.0
D-5	72	1	0.0	53.3	66	53.3	10	----	53.3	0.0	5	-5.0
D-6	73	1	0.0	52.1	66	52.1	10	----	52.1	0.0	5	-5.0
D-8	74	1	0.0	49.2	66	49.2	10	----	49.2	0.0	5	-5.0
D-9	75	1	0.0	56.4	66	56.4	10	----	56.4	0.0	5	-5.0
D-10	76	1	0.0	55.0	66	55.0	10	----	55.0	0.0	5	-5.0
D-11	77	1	0.0	56.5	66	56.5	10	----	56.5	0.0	5	-5.0
D-12	78	1	0.0	55.8	66	55.8	10	----	55.8	0.0	5	-5.0
D-13	79	1	0.0	56.7	66	56.7	10	----	56.7	0.0	5	-5.0
D-14	80	1	0.0	57.2	66	57.2	10	----	57.2	0.0	5	-5.0
D-15	81	1	0.0	55.0	66	55.0	10	----	55.0	0.0	5	-5.0
D-16	82	1	0.0	55.3	66	55.3	10	----	55.3	0.0	5	-5.0
D-17	83	1	0.0	58.4	66	58.4	10	----	58.4	0.0	5	-5.0
D-21	84	1	0.0	56.1	66	56.1	10	----	56.1	0.0	5	-5.0
D-22	85	1	0.0	55.4	66	55.4	10	----	55.4	0.0	5	-5.0
D-28	86	1	0.0	51.5	66	51.5	10	----	51.5	0.0	5	-5.0
D-1iii	87	1	0.0	64.4	66	64.4	10	----	64.4	0.0	5	-5.0
D-2iii	88	1	0.0	53.2	66	53.2	10	----	53.2	0.0	5	-5.0
D-3ii	89	1	0.0	51.2	66	51.2	10	----	51.2	0.0	5	-5.0
D-3iii	90	1	0.0	50.0	66	50.0	10	----	50.0	0.0	5	-5.0
D-3iva	91	1	0.0	51.4	66	51.4	10	----	51.4	0.0	5	-5.0
D-3ivb	92	1	0.0	50.3	66	50.3	10	----	50.3	0.0	5	-5.0
D-4ii	93	1	0.0	49.2	66	49.2	10	----	49.2	0.0	5	-5.0
D-4iii	94	1	0.0	48.0	66	48.0	10	----	48.0	0.0	5	-5.0
D-6iii	95	1	0.0	45.2	66	45.2	10	----	45.2	0.0	5	-5.0
D-7ii	96	1	0.0	44.6	66	44.6	10	----	44.6	0.0	5	-5.0
D-8iii	97	1	0.0	43.5	66	43.5	10	----	43.5	0.0	5	-5.0
D-9iia	98	1	0.0	43.5	66	43.5	10	----	43.5	0.0	5	-5.0
D-9iib	99	1	0.0	43.3	66	43.3	10	----	43.3	0.0	5	-5.0
D-10iii	100	1	0.0	43.5	66	43.5	10	----	43.5	0.0	5	-5.0
D-11iia	101	1	0.0	43.8	66	43.8	10	----	43.8	0.0	5	-5.0
D-11iib	102	1	0.0	43.7	66	43.7	10	----	43.7	0.0	5	-5.0
D-12ii	103	1	0.0	45.9	66	45.9	10	----	45.9	0.0	5	-5.0
D-12iia	104	1	0.0	43.9	66	43.9	10	----	43.9	0.0	5	-5.0
D-12iib	105	1	0.0	44.3	66	44.3	10	----	44.3	0.0	5	-5.0
D-13ii	106	1	0.0	47.2	66	47.2	10	----	47.2	0.0	5	-5.0



**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

D-13iii	107	1	0.0	43.5	66	43.5	10	----	43.5	0.0	5	-5.0
D-15ii	108	1	0.0	52.0	66	52.0	10	----	52.0	0.0	5	-5.0
D-15iii	109	1	0.0	49.9	66	49.9	10	----	49.9	0.0	5	-5.0
D-15iv	110	1	0.0	48.6	66	48.6	10	----	48.6	0.0	5	-5.0
D-15v	111	1	0.0	46.4	66	46.4	10	----	46.4	0.0	5	-5.0
D-15vi	112	1	0.0	45.3	66	45.3	10	----	45.3	0.0	5	-5.0
D-15vii	113	1	0.0	44.3	66	44.3	10	----	44.3	0.0	5	-5.0
D-15viii	114	1	0.0	43.7	66	43.7	10	----	43.7	0.0	5	-5.0
D-15ix	115	1	0.0	42.7	66	42.7	10	----	42.7	0.0	5	-5.0
D-15x	116	1	0.0	42.1	66	42.1	10	----	42.1	0.0	5	-5.0
D-16ii	117	1	0.0	52.3	66	52.3	10	----	52.3	0.0	5	-5.0
D-16iii	118	1	0.0	49.8	66	49.8	10	----	49.8	0.0	5	-5.0
D-16iv	119	1	0.0	48.3	66	48.3	10	----	48.3	0.0	5	-5.0
D-16v	120	1	0.0	47.3	66	47.3	10	----	47.3	0.0	5	-5.0
D-16vi	121	1	0.0	46.3	66	46.3	10	----	46.3	0.0	5	-5.0
D-16vii	122	1	0.0	44.9	66	44.9	10	----	44.9	0.0	5	-5.0
D-16viii	123	1	0.0	44.2	66	44.2	10	----	44.2	0.0	5	-5.0
D-16ix	124	1	0.0	43.4	66	43.4	10	----	43.4	0.0	5	-5.0
D-16x	125	1	0.0	41.8	66	41.8	10	----	41.8	0.0	5	-5.0
D-17iii	126	1	0.0	45.2	66	45.2	10	----	45.2	0.0	5	-5.0
D-18iii	127	1	0.0	44.3	66	44.3	10	----	44.3	0.0	5	-5.0
D-19iii	128	1	0.0	43.7	66	43.7	10	----	43.7	0.0	5	-5.0
D-20iii	129	1	0.0	43.5	66	43.5	10	----	43.5	0.0	5	-5.0
D-21ii	130	1	0.0	52.6	66	52.6	10	----	52.6	0.0	5	-5.0
D-21iii	131	1	0.0	50.5	66	50.5	10	----	50.5	0.0	5	-5.0
D-21iv	132	1	0.0	49.2	66	49.2	10	----	49.2	0.0	5	-5.0
D-21v	133	1	0.0	47.7	66	47.7	10	----	47.7	0.0	5	-5.0
D-21vi	134	1	0.0	46.6	66	46.6	10	----	46.6	0.0	5	-5.0
D-21vii	135	1	0.0	46.0	66	46.0	10	----	46.0	0.0	5	-5.0
D-21viii	136	1	0.0	45.4	66	45.4	10	----	45.4	0.0	5	-5.0
D-21ix	137	1	0.0	45.2	66	45.2	10	----	45.2	0.0	5	-5.0
D-22ii	138	1	0.0	52.0	66	52.0	10	----	52.0	0.0	5	-5.0
D-22iii	139	1	0.0	49.8	66	49.8	10	----	49.8	0.0	5	-5.0
D-22iv	140	1	0.0	48.7	66	48.7	10	----	48.7	0.0	5	-5.0
D-22v	141	1	0.0	47.6	66	47.6	10	----	47.6	0.0	5	-5.0
D-22vi	142	1	0.0	46.9	66	46.9	10	----	46.9	0.0	5	-5.0
D-22vii	143	1	0.0	46.0	66	46.0	10	----	46.0	0.0	5	-5.0
D-22viii	144	1	0.0	45.0	66	45.0	10	----	45.0	0.0	5	-5.0
D-22ix	145	1	0.0	44.3	66	44.3	10	----	44.3	0.0	5	-5.0
D-23iii	146	1	0.0	46.0	66	46.0	10	----	46.0	0.0	5	-5.0
D-24iii	147	1	0.0	45.7	66	45.7	10	----	45.7	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

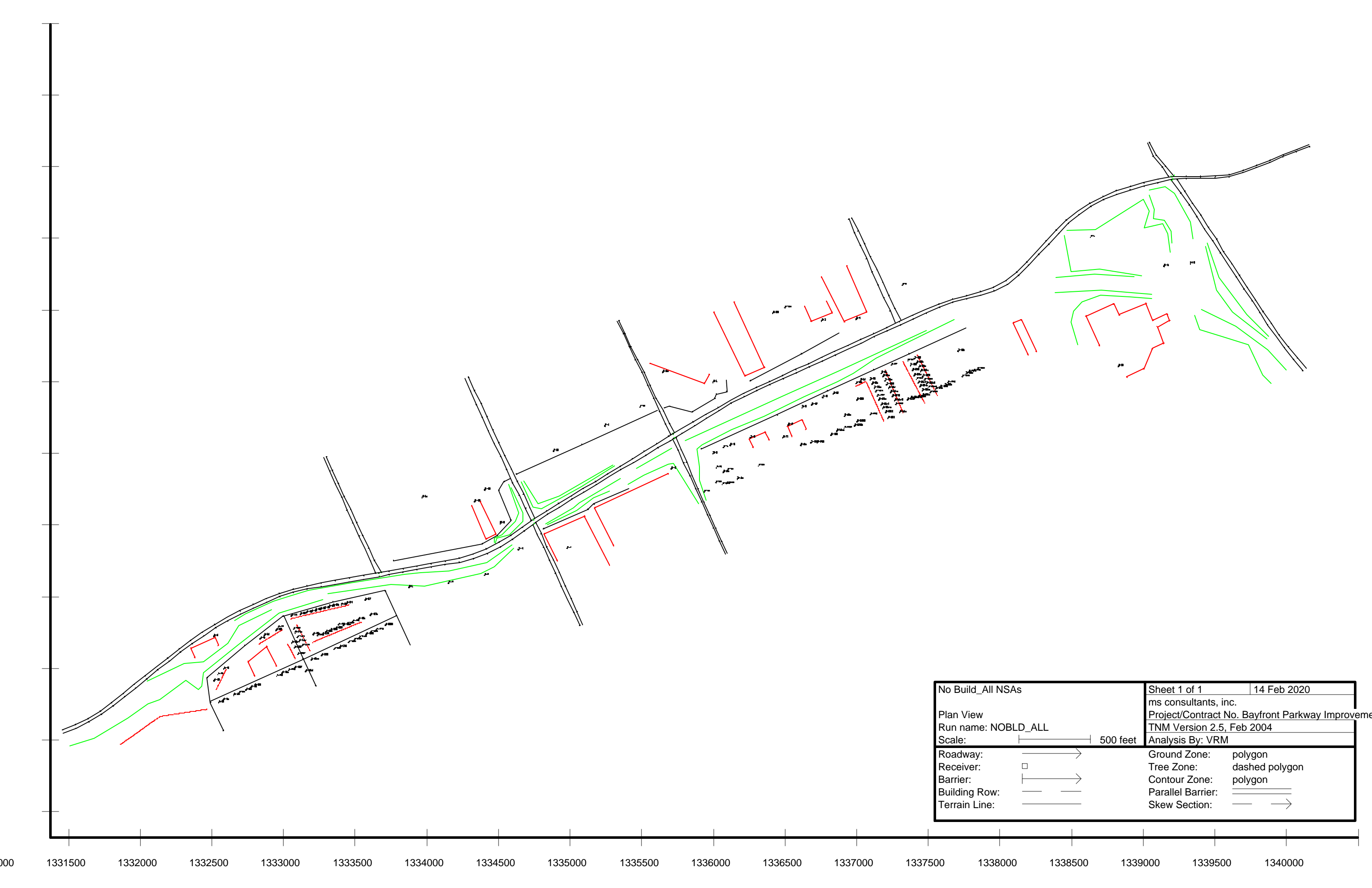
**Bayfront Parkway Improvements**

D-25iii	148	1	0.0	46.4	66	46.4	10	----	46.4	0.0	5	-5.0
D-26iii	149	1	0.0	46.8	66	46.8	10	----	46.8	0.0	5	-5.0
D-27iii	150	1	0.0	47.1	66	47.1	10	----	47.1	0.0	5	-5.0
D-28iii	151	1	0.0	47.2	66	47.2	10	----	47.2	0.0	5	-5.0
D-29iii	152	1	0.0	47.4	66	47.4	10	----	47.4	0.0	5	-5.0
D-30iii	153	1	0.0	47.3	66	47.3	10	----	47.3	0.0	5	-5.0
D-31iii	154	1	0.0	47.5	66	47.5	10	----	47.5	0.0	5	-5.0
E-3	155	1	0.0	57.2	66	57.2	10	----	57.2	0.0	5	-5.0
E-1iii	156	1	0.0	52.9	66	52.9	10	----	52.9	0.0	5	-5.0
E-2ii	157	1	0.0	51.5	66	51.5	10	----	51.5	0.0	5	-5.0
E-3ii	158	1	0.0	54.4	66	54.4	10	----	54.4	0.0	5	-5.0
F-1	159	1	0.0	55.7	66	55.7	10	----	55.7	0.0	5	-5.0
F-2	160	1	0.0	58.2	66	58.2	10	----	58.2	0.0	5	-5.0
G-1	161	1	0.0	58.4	66	58.4	10	----	58.4	0.0	5	-5.0
G-3	162	1	0.0	53.7	66	53.7	10	----	53.7	0.0	5	-5.0
G-4	163	1	0.0	58.2	66	58.2	10	----	58.2	0.0	5	-5.0
G-5	164	1	0.0	55.2	66	55.2	10	----	55.2	0.0	5	-5.0
G-1iii	165	1	0.0	54.9	66	54.9	10	----	54.9	0.0	5	-5.0
G-2iii	166	1	0.0	46.8	66	46.8	10	----	46.8	0.0	5	-5.0
G-3iii	167	1	0.0	46.6	66	46.6	10	----	46.6	0.0	5	-5.0
H-1	168	1	0.0	55.5	66	55.5	10	----	55.5	0.0	5	-5.0
H-2	169	1	0.0	49.6	66	49.6	10	----	49.6	0.0	5	-5.0
H-3	170	1	0.0	52.7	66	52.7	10	----	52.7	0.0	5	-5.0
H-1ii	171	1	0.0	39.0	66	39.0	10	----	39.0	0.0	5	-5.0
F-3	173	1	0.0	52.7	66	52.7	10	----	52.7	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		172	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							

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Appendix 5

#### TNM No-Build Models



RESULTS: SOUND LEVELS

Bayfront Parkway Improvements

ms consultants, inc. 14 February 2020  
 VRM TNM 2.5  
 Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: Bayfront Parkway Improvements

RUN: No Build\_All NSAs

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 LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dB	dB	dB	dB	dB		dB	dB	dB	dB
A-4	1	1	65.6	65.6	66	0.0	10	----	65.6	0.0	5	-5.0
A-9	2	1	46.5	47.8	66	1.3	10	----	47.8	0.0	5	-5.0
A-10	3	1	46.7	48.0	66	1.3	10	----	48.0	0.0	5	-5.0
A-12	4	1	46.2	47.5	66	1.3	10	----	47.5	0.0	5	-5.0
A-13	5	1	46.5	47.8	66	1.3	10	----	47.8	0.0	5	-5.0
A-14	6	1	49.1	50.3	66	1.2	10	----	50.3	0.0	5	-5.0
A-15	7	1	49.5	50.7	66	1.2	10	----	50.7	0.0	5	-5.0
A-16	8	1	49.3	50.5	66	1.2	10	----	50.5	0.0	5	-5.0
A-17	9	1	49.6	50.8	66	1.2	10	----	50.8	0.0	5	-5.0
A-18	10	1	50.3	51.5	66	1.2	10	----	51.5	0.0	5	-5.0
A-19	11	1	51.4	52.6	66	1.2	10	----	52.6	0.0	5	-5.0
A-20	12	1	51.2	52.5	66	1.3	10	----	52.5	0.0	5	-5.0
A-21	13	1	51.7	53.0	66	1.3	10	----	53.0	0.0	5	-5.0
A-22	14	1	51.9	53.0	66	1.1	10	----	53.0	0.0	5	-5.0
A-23	15	1	51.6	52.8	66	1.2	10	----	52.8	0.0	5	-5.0
A-24	16	1	52.5	53.8	66	1.3	10	----	53.8	0.0	5	-5.0
A-27	17	1	53.9	55.2	66	1.3	10	----	55.2	0.0	5	-5.0
A-2ii	18	1	45.2	46.4	66	1.2	10	----	46.4	0.0	5	-5.0
A-1iii	19	1	40.7	42.0	66	1.3	10	----	42.0	0.0	5	-5.0
A-2iii	20	1	40.4	41.8	66	1.4	10	----	41.8	0.0	5	-5.0
A-3ii	21	1	45.3	46.4	66	1.1	10	----	46.4	0.0	5	-5.0
A-4ii	22	1	45.4	46.5	66	1.1	10	----	46.5	0.0	5	-5.0
A-4iii	23	1	40.4	41.7	66	1.3	10	----	41.7	0.0	5	-5.0
A-5iii	24	1	40.6	41.9	66	1.3	10	----	41.9	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

A-6iii	25	1	40.5	41.7	66	1.2	10	----	41.7	0.0	5	-5.0
A-7iii	26	1	40.2	41.5	66	1.3	10	----	41.5	0.0	5	-5.0
A-8iii	27	1	40.1	41.5	66	1.4	10	----	41.5	0.0	5	-5.0
A-9iii	28	1	39.6	40.9	66	1.3	10	----	40.9	0.0	5	-5.0
A-10iii	29	1	40.8	42.3	66	1.5	10	----	42.3	0.0	5	-5.0
A-11iii	30	1	41.3	42.8	66	1.5	10	----	42.8	0.0	5	-5.0
A-13ii	31	1	42.4	43.8	66	1.4	10	----	43.8	0.0	5	-5.0
A-13iii	32	1	41.7	43.1	66	1.4	10	----	43.1	0.0	5	-5.0
A-13iv	33	1	39.9	41.3	66	1.4	10	----	41.3	0.0	5	-5.0
A-13v	34	1	42.0	43.6	66	1.6	10	----	43.6	0.0	5	-5.0
A-13vi	35	1	42.1	43.2	66	1.1	10	----	43.2	0.0	5	-5.0
A-14ii	36	1	44.2	45.5	66	1.3	10	----	45.5	0.0	5	-5.0
A-14iii	37	1	43.6	44.9	66	1.3	10	----	44.9	0.0	5	-5.0
A-14iv	38	1	43.1	44.4	66	1.3	10	----	44.4	0.0	5	-5.0
A-14v	39	1	42.4	43.8	66	1.4	10	----	43.8	0.0	5	-5.0
A-14vi	40	1	42.1	43.4	66	1.3	10	----	43.4	0.0	5	-5.0
A-14vii	41	1	41.7	43.1	66	1.4	10	----	43.1	0.0	5	-5.0
A-15ii	42	1	44.5	46.0	66	1.5	10	----	46.0	0.0	5	-5.0
A-15iii	43	1	42.3	43.5	66	1.2	10	----	43.5	0.0	5	-5.0
A-16ii	44	1	44.5	46.0	66	1.5	10	----	46.0	0.0	5	-5.0
A-17ii	45	1	44.9	46.4	66	1.5	10	----	46.4	0.0	5	-5.0
A-18ii	46	1	45.3	46.7	66	1.4	10	----	46.7	0.0	5	-5.0
A-18iii	47	1	42.8	44.0	66	1.2	10	----	44.0	0.0	5	-5.0
A-19ii	48	1	45.7	47.2	66	1.5	10	----	47.2	0.0	5	-5.0
A-19iii	49	1	42.9	44.2	66	1.3	10	----	44.2	0.0	5	-5.0
A-20ii	50	1	46.0	47.5	66	1.5	10	----	47.5	0.0	5	-5.0
A-21ii	51	1	46.3	47.7	66	1.4	10	----	47.7	0.0	5	-5.0
A-21iii	52	1	43.7	44.9	66	1.2	10	----	44.9	0.0	5	-5.0
A-22ii	53	1	46.4	47.8	66	1.4	10	----	47.8	0.0	5	-5.0
A-23ii	54	1	46.7	48.1	66	1.4	10	----	48.1	0.0	5	-5.0
A-23iii	55	1	44.2	45.3	66	1.1	10	----	45.3	0.0	5	-5.0
A-24ii	56	1	47.2	48.7	66	1.5	10	----	48.7	0.0	5	-5.0
A-24iii	57	1	45.1	46.2	66	1.1	10	----	46.2	0.0	5	-5.0
A-25ii	58	1	47.8	49.4	66	1.6	10	----	49.4	0.0	5	-5.0
A-25iii	59	1	45.7	46.8	66	1.1	10	----	46.8	0.0	5	-5.0
A-26iii	60	1	46.0	47.1	66	1.1	10	----	47.1	0.0	5	-5.0
A-27ii	61	1	49.2	50.6	66	1.4	10	----	50.6	0.0	5	-5.0
A-27iii	62	1	46.8	47.9	66	1.1	10	----	47.9	0.0	5	-5.0
A-28iii	63	1	47.4	48.4	66	1.0	10	----	48.4	0.0	5	-5.0
B-1	64	1	60.8	61.6	66	0.8	10	----	61.6	0.0	5	-5.0
B-2	65	1	56.4	57.2	66	0.8	10	----	57.2	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

B-3	66	1	60.0	60.7	66	0.7	10	----	60.7	0.0	5	-5.0
B-4	67	1	64.1	65.0	66	0.9	10	----	65.0	0.0	5	-5.0
C-1	68	1	50.8	52.8	66	2.0	10	----	52.8	0.0	5	-5.0
C-2	69	1	60.5	61.6	66	1.1	10	----	61.6	0.0	5	-5.0
D-3	70	1	54.5	55.5	66	1.0	10	----	55.5	0.0	5	-5.0
D-4	71	1	54.4	55.1	66	0.7	10	----	55.1	0.0	5	-5.0
D-5	72	1	53.3	53.9	66	0.6	10	----	53.9	0.0	5	-5.0
D-6	73	1	52.1	52.7	66	0.6	10	----	52.7	0.0	5	-5.0
D-8	74	1	49.2	49.8	66	0.6	10	----	49.8	0.0	5	-5.0
D-9	75	1	56.4	56.8	66	0.4	10	----	56.8	0.0	5	-5.0
D-10	76	1	55.0	55.4	66	0.4	10	----	55.4	0.0	5	-5.0
D-11	77	1	56.5	56.8	66	0.3	10	----	56.8	0.0	5	-5.0
D-12	78	1	55.8	56.3	66	0.5	10	----	56.3	0.0	5	-5.0
D-13	79	1	56.7	57.2	66	0.5	10	----	57.2	0.0	5	-5.0
D-14	80	1	57.2	57.7	66	0.5	10	----	57.7	0.0	5	-5.0
D-15	81	1	55.0	55.5	66	0.5	10	----	55.5	0.0	5	-5.0
D-16	82	1	55.3	55.6	66	0.3	10	----	55.6	0.0	5	-5.0
D-17	83	1	58.4	58.7	66	0.3	10	----	58.7	0.0	5	-5.0
D-21	84	1	56.1	56.2	66	0.1	10	----	56.2	0.0	5	-5.0
D-22	85	1	55.4	55.3	66	-0.1	10	----	55.3	0.0	5	-5.0
D-28	86	1	51.5	52.0	66	0.5	10	----	52.0	0.0	5	-5.0
D-1iii	87	1	64.4	64.7	66	0.3	10	----	64.7	0.0	5	-5.0
D-2iii	88	1	53.2	53.6	66	0.4	10	----	53.6	0.0	5	-5.0
D-3ii	89	1	51.2	51.9	66	0.7	10	----	51.9	0.0	5	-5.0
D-3iii	90	1	50.0	50.6	66	0.6	10	----	50.6	0.0	5	-5.0
D-3iva	91	1	51.4	51.8	66	0.4	10	----	51.8	0.0	5	-5.0
D-3ivb	92	1	50.3	50.7	66	0.4	10	----	50.7	0.0	5	-5.0
D-4ii	93	1	49.2	49.9	66	0.7	10	----	49.9	0.0	5	-5.0
D-4iii	94	1	48.0	48.5	66	0.5	10	----	48.5	0.0	5	-5.0
D-6iii	95	1	45.2	45.9	66	0.7	10	----	45.9	0.0	5	-5.0
D-7ii	96	1	44.6	45.3	66	0.7	10	----	45.3	0.0	5	-5.0
D-8iii	97	1	43.5	44.3	66	0.8	10	----	44.3	0.0	5	-5.0
D-9iiia	98	1	43.5	44.2	66	0.7	10	----	44.2	0.0	5	-5.0
D-9iiib	99	1	43.3	43.9	66	0.6	10	----	43.9	0.0	5	-5.0
D-10iii	100	1	43.5	44.2	66	0.7	10	----	44.2	0.0	5	-5.0
D-11iiia	101	1	43.8	44.4	66	0.6	10	----	44.4	0.0	5	-5.0
D-11iiib	102	1	43.7	44.4	66	0.7	10	----	44.4	0.0	5	-5.0
D-12ii	103	1	45.9	46.5	66	0.6	10	----	46.5	0.0	5	-5.0
D-12iiia	104	1	43.9	44.6	66	0.7	10	----	44.6	0.0	5	-5.0
D-12iiib	105	1	44.3	44.9	66	0.6	10	----	44.9	0.0	5	-5.0
D-13ii	106	1	47.2	47.8	66	0.6	10	----	47.8	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

D-13iii	107	1	43.5	44.1	66	0.6	10	----	44.1	0.0	5	-5.0
D-15ii	108	1	52.0	52.5	66	0.5	10	----	52.5	0.0	5	-5.0
D-15iii	109	1	49.9	50.3	66	0.4	10	----	50.3	0.0	5	-5.0
D-15iv	110	1	48.6	49.3	66	0.7	10	----	49.3	0.0	5	-5.0
D-15v	111	1	46.4	46.7	66	0.3	10	----	46.7	0.0	5	-5.0
D-15vi	112	1	45.3	45.9	66	0.6	10	----	45.9	0.0	5	-5.0
D-15vii	113	1	44.3	44.9	66	0.6	10	----	44.9	0.0	5	-5.0
D-15viii	114	1	43.7	44.2	66	0.5	10	----	44.2	0.0	5	-5.0
D-15ix	115	1	42.7	43.3	66	0.6	10	----	43.3	0.0	5	-5.0
D-15x	116	1	42.1	42.7	66	0.6	10	----	42.7	0.0	5	-5.0
D-16ii	117	1	52.3	52.6	66	0.3	10	----	52.6	0.0	5	-5.0
D-16iii	118	1	49.8	50.3	66	0.5	10	----	50.3	0.0	5	-5.0
D-16iv	119	1	48.3	49.0	66	0.7	10	----	49.0	0.0	5	-5.0
D-16v	120	1	47.3	47.9	66	0.6	10	----	47.9	0.0	5	-5.0
D-16vi	121	1	46.3	46.9	66	0.6	10	----	46.9	0.0	5	-5.0
D-16vii	122	1	44.9	45.5	66	0.6	10	----	45.5	0.0	5	-5.0
D-16viii	123	1	44.2	44.7	66	0.5	10	----	44.7	0.0	5	-5.0
D-16ix	124	1	43.4	44.0	66	0.6	10	----	44.0	0.0	5	-5.0
D-16x	125	1	41.8	42.5	66	0.7	10	----	42.5	0.0	5	-5.0
D-17iii	126	1	45.2	45.7	66	0.5	10	----	45.7	0.0	5	-5.0
D-18iii	127	1	44.3	45.0	66	0.7	10	----	45.0	0.0	5	-5.0
D-19iii	128	1	43.7	44.3	66	0.6	10	----	44.3	0.0	5	-5.0
D-20iii	129	1	43.5	44.1	66	0.6	10	----	44.1	0.0	5	-5.0
D-21ii	130	1	52.6	52.6	66	0.0	10	----	52.6	0.0	5	-5.0
D-21iii	131	1	50.5	50.6	66	0.1	10	----	50.6	0.0	5	-5.0
D-21iv	132	1	49.2	49.4	66	0.2	10	----	49.4	0.0	5	-5.0
D-21v	133	1	47.7	48.1	66	0.4	10	----	48.1	0.0	5	-5.0
D-21vi	134	1	46.6	46.9	66	0.3	10	----	46.9	0.0	5	-5.0
D-21vii	135	1	46.0	46.3	66	0.3	10	----	46.3	0.0	5	-5.0
D-21viii	136	1	45.4	45.6	66	0.2	10	----	45.6	0.0	5	-5.0
D-21ix	137	1	45.2	45.3	66	0.1	10	----	45.3	0.0	5	-5.0
D-22ii	138	1	52.0	52.1	66	0.1	10	----	52.1	0.0	5	-5.0
D-22iii	139	1	49.8	50.1	66	0.3	10	----	50.1	0.0	5	-5.0
D-22iv	140	1	48.7	48.8	66	0.1	10	----	48.8	0.0	5	-5.0
D-22v	141	1	47.6	47.8	66	0.2	10	----	47.8	0.0	5	-5.0
D-22vi	142	1	46.9	47.1	66	0.2	10	----	47.1	0.0	5	-5.0
D-22vii	143	1	46.0	46.5	66	0.5	10	----	46.5	0.0	5	-5.0
D-22viii	144	1	45.0	45.7	66	0.7	10	----	45.7	0.0	5	-5.0
D-22ix	145	1	44.3	45.0	66	0.7	10	----	45.0	0.0	5	-5.0
D-23iii	146	1	46.0	46.6	66	0.6	10	----	46.6	0.0	5	-5.0
D-24iii	147	1	45.7	46.5	66	0.8	10	----	46.5	0.0	5	-5.0



**RESULTS: SOUND LEVELS**

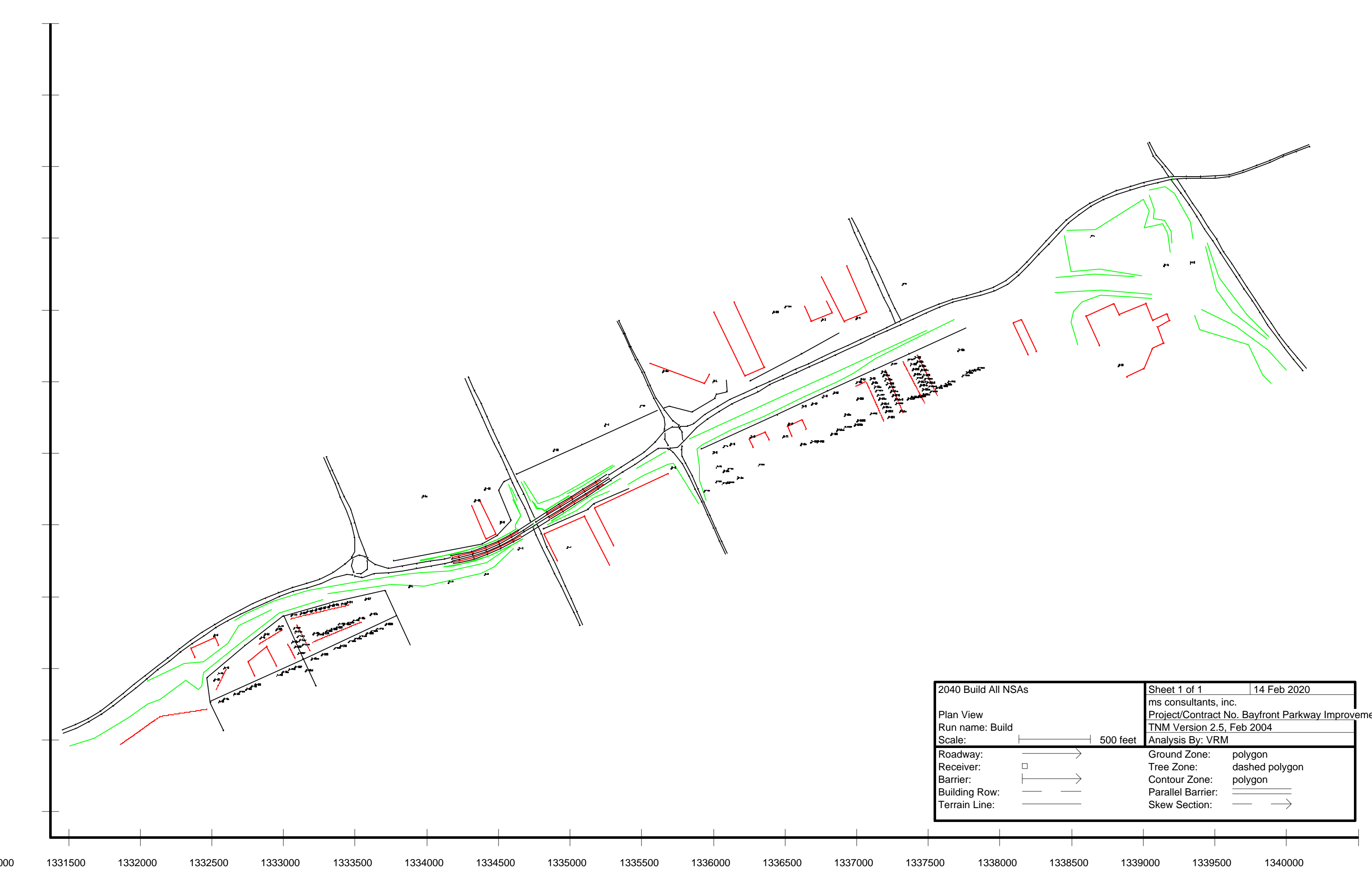
**Bayfront Parkway Improvements**

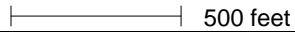






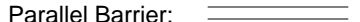
D-25iii	148	1	46.4	46.9	66	0.5	10	----	46.9	0.0	5	-5.0
D-26iii	149	1	46.8	47.5	66	0.7	10	----	47.5	0.0	5	-5.0
D-27iii	150	1	47.1	47.7	66	0.6	10	----	47.7	0.0	5	-5.0
D-28iii	151	1	47.2	47.9	66	0.7	10	----	47.9	0.0	5	-5.0
D-29iii	152	1	47.4	48.0	66	0.6	10	----	48.0	0.0	5	-5.0
D-30iii	153	1	47.3	47.8	66	0.5	10	----	47.8	0.0	5	-5.0
D-31iii	154	1	47.5	48.0	66	0.5	10	----	48.0	0.0	5	-5.0
E-3	155	1	57.2	59.7	66	2.5	10	----	59.7	0.0	5	-5.0
E-1iii	156	1	52.9	54.5	66	1.6	10	----	54.5	0.0	5	-5.0
E-2ii	157	1	51.5	54.0	66	2.5	10	----	54.0	0.0	5	-5.0
E-3ii	158	1	54.4	56.4	66	2.0	10	----	56.4	0.0	5	-5.0
F-1	159	1	55.7	56.1	66	0.4	10	----	56.1	0.0	5	-5.0
F-2	160	1	58.2	58.8	66	0.6	10	----	58.8	0.0	5	-5.0
G-1	161	1	58.4	59.1	66	0.7	10	----	59.1	0.0	5	-5.0
G-3	162	1	53.7	56.0	66	2.3	10	----	56.0	0.0	5	-5.0
G-4	163	1	58.2	59.4	66	1.2	10	----	59.4	0.0	5	-5.0
G-5	164	1	55.2	56.3	66	1.1	10	----	56.3	0.0	5	-5.0
G-1iii	165	1	54.9	55.7	66	0.8	10	----	55.7	0.0	5	-5.0
G-2iii	166	1	46.8	49.7	66	2.9	10	----	49.7	0.0	5	-5.0
G-3iii	167	1	46.6	49.7	66	3.1	10	----	49.7	0.0	5	-5.0
H-1	168	1	55.5	55.7	66	0.2	10	----	55.7	0.0	5	-5.0
H-2	169	1	49.6	49.6	66	0.0	10	----	49.6	0.0	5	-5.0
H-3	170	1	52.7	52.8	66	0.1	10	----	52.8	0.0	5	-5.0
H-1ii	171	1	39.0	39.7	66	0.7	10	----	39.7	0.0	5	-5.0
F-3	173	1	52.7	53.5	66	0.8	10	----	53.5	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		172	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							

## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Appendix 6

#### TNM Build Models



2040 Build All NSAs		Sheet 1 of 1	14 Feb 2020
Plan View		ms consultants, inc.	
Run name: Build		Project/Contract No. Bayfront Parkway Improvement	
Scale:  500 feet		TNM Version 2.5, Feb 2004	
		Analysis By: VRM	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	



**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

A-6iii	25	1	40.5	40.5	66	0.0	10	----	40.5	0.0	5	-5.0
A-7iii	26	1	40.2	40.5	66	0.3	10	----	40.5	0.0	5	-5.0
A-8iii	27	1	40.1	40.5	66	0.4	10	----	40.5	0.0	5	-5.0
A-9iii	28	1	39.6	40.0	66	0.4	10	----	40.0	0.0	5	-5.0
A-10iii	29	1	40.8	41.0	66	0.2	10	----	41.0	0.0	5	-5.0
A-11iii	30	1	41.3	41.3	66	0.0	10	----	41.3	0.0	5	-5.0
A-13ii	31	1	42.4	43.9	66	1.5	10	----	43.9	0.0	5	-5.0
A-13iii	32	1	41.7	42.9	66	1.2	10	----	42.9	0.0	5	-5.0
A-13iv	33	1	39.9	41.4	66	1.5	10	----	41.4	0.0	5	-5.0
A-13v	34	1	42.0	41.9	66	-0.1	10	----	41.9	0.0	5	-5.0
A-13vi	35	1	42.1	41.2	66	-0.9	10	----	41.2	0.0	5	-5.0
A-14ii	36	1	44.2	46.5	66	2.3	10	----	46.5	0.0	5	-5.0
A-14iii	37	1	43.6	45.5	66	1.9	10	----	45.5	0.0	5	-5.0
A-14iv	38	1	43.1	44.5	66	1.4	10	----	44.5	0.0	5	-5.0
A-14v	39	1	42.4	43.7	66	1.3	10	----	43.7	0.0	5	-5.0
A-14vi	40	1	42.1	43.0	66	0.9	10	----	43.0	0.0	5	-5.0
A-14vii	41	1	41.7	41.8	66	0.1	10	----	41.8	0.0	5	-5.0
A-15ii	42	1	44.5	45.1	66	0.6	10	----	45.1	0.0	5	-5.0
A-15iii	43	1	42.3	41.9	66	-0.4	10	----	41.9	0.0	5	-5.0
A-16ii	44	1	44.5	44.8	66	0.3	10	----	44.8	0.0	5	-5.0
A-17ii	45	1	44.9	44.9	66	0.0	10	----	44.9	0.0	5	-5.0
A-18ii	46	1	45.3	45.2	66	-0.1	10	----	45.2	0.0	5	-5.0
A-18iii	47	1	42.8	42.2	66	-0.6	10	----	42.2	0.0	5	-5.0
A-19ii	48	1	45.7	45.3	66	-0.4	10	----	45.3	0.0	5	-5.0
A-19iii	49	1	42.9	42.6	66	-0.3	10	----	42.6	0.0	5	-5.0
A-20ii	50	1	46.0	45.4	66	-0.6	10	----	45.4	0.0	5	-5.0
A-21ii	51	1	46.3	45.9	66	-0.4	10	----	45.9	0.0	5	-5.0
A-21iii	52	1	43.7	43.3	66	-0.4	10	----	43.3	0.0	5	-5.0
A-22ii	53	1	46.4	46.0	66	-0.4	10	----	46.0	0.0	5	-5.0
A-23ii	54	1	46.7	46.4	66	-0.3	10	----	46.4	0.0	5	-5.0
A-23iii	55	1	44.2	43.9	66	-0.3	10	----	43.9	0.0	5	-5.0
A-24ii	56	1	47.2	47.2	66	0.0	10	----	47.2	0.0	5	-5.0
A-24iii	57	1	45.1	44.3	66	-0.8	10	----	44.3	0.0	5	-5.0
A-25ii	58	1	47.8	47.9	66	0.1	10	----	47.9	0.0	5	-5.0
A-25iii	59	1	45.7	45.2	66	-0.5	10	----	45.2	0.0	5	-5.0
A-26iii	60	1	46.0	45.5	66	-0.5	10	----	45.5	0.0	5	-5.0
A-27ii	61	1	49.2	48.8	66	-0.4	10	----	48.8	0.0	5	-5.0
A-27iii	62	1	46.8	46.1	66	-0.7	10	----	46.1	0.0	5	-5.0
A-28iii	63	1	47.4	46.7	66	-0.7	10	----	46.7	0.0	5	-5.0
B-1	64	1	60.8	60.9	66	0.1	10	----	60.9	0.0	5	-5.0
B-2	65	1	56.4	56.3	66	-0.1	10	----	56.3	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

B-3	66	1	60.0	60.2	66	0.2	10	----	60.2	0.0	5	-5.0
B-4	67	1	64.1	63.6	66	-0.5	10	----	63.6	0.0	5	-5.0
C-1	68	1	50.8	50.5	66	-0.3	10	----	50.5	0.0	5	-5.0
C-2	69	1	60.5	60.3	66	-0.2	10	----	60.3	0.0	5	-5.0
D-3	70	1	54.5	54.4	66	-0.1	10	----	54.4	0.0	5	-5.0
D-4	71	1	54.4	54.1	66	-0.3	10	----	54.1	0.0	5	-5.0
D-5	72	1	53.3	53.1	66	-0.2	10	----	53.1	0.0	5	-5.0
D-6	73	1	52.1	51.8	66	-0.3	10	----	51.8	0.0	5	-5.0
D-8	74	1	49.2	49.0	66	-0.2	10	----	49.0	0.0	5	-5.0
D-9	75	1	56.4	56.1	66	-0.3	10	----	56.1	0.0	5	-5.0
D-10	76	1	55.0	54.7	66	-0.3	10	----	54.7	0.0	5	-5.0
D-11	77	1	56.5	56.2	66	-0.3	10	----	56.2	0.0	5	-5.0
D-12	78	1	55.8	55.5	66	-0.3	10	----	55.5	0.0	5	-5.0
D-13	79	1	56.7	56.1	66	-0.6	10	----	56.1	0.0	5	-5.0
D-14	80	1	57.2	56.6	66	-0.6	10	----	56.6	0.0	5	-5.0
D-15	81	1	55.0	54.3	66	-0.7	10	----	54.3	0.0	5	-5.0
D-16	82	1	55.3	54.5	66	-0.8	10	----	54.5	0.0	5	-5.0
D-17	83	1	58.4	57.8	66	-0.6	10	----	57.8	0.0	5	-5.0
D-21	84	1	56.1	55.2	66	-0.9	10	----	55.2	0.0	5	-5.0
D-22	85	1	55.4	54.3	66	-1.1	10	----	54.3	0.0	5	-5.0
D-28	86	1	51.5	50.6	66	-0.9	10	----	50.6	0.0	5	-5.0
D-1iii	87	1	64.4	63.1	66	-1.3	10	----	63.1	0.0	5	-5.0
D-2iii	88	1	53.2	52.5	66	-0.7	10	----	52.5	0.0	5	-5.0
D-3ii	89	1	51.2	50.8	66	-0.4	10	----	50.8	0.0	5	-5.0
D-3iii	90	1	50.0	49.6	66	-0.4	10	----	49.6	0.0	5	-5.0
D-3iva	91	1	51.4	50.8	66	-0.6	10	----	50.8	0.0	5	-5.0
D-3ivb	92	1	50.3	49.7	66	-0.6	10	----	49.7	0.0	5	-5.0
D-4ii	93	1	49.2	48.8	66	-0.4	10	----	48.8	0.0	5	-5.0
D-4iii	94	1	48.0	47.5	66	-0.5	10	----	47.5	0.0	5	-5.0
D-6iii	95	1	45.2	44.7	66	-0.5	10	----	44.7	0.0	5	-5.0
D-7ii	96	1	44.6	44.2	66	-0.4	10	----	44.2	0.0	5	-5.0
D-8iii	97	1	43.5	43.0	66	-0.5	10	----	43.0	0.0	5	-5.0
D-9iiia	98	1	43.5	43.0	66	-0.5	10	----	43.0	0.0	5	-5.0
D-9iiib	99	1	43.3	42.8	66	-0.5	10	----	42.8	0.0	5	-5.0
D-10iii	100	1	43.5	43.1	66	-0.4	10	----	43.1	0.0	5	-5.0
D-11iiia	101	1	43.8	43.3	66	-0.5	10	----	43.3	0.0	5	-5.0
D-11iiib	102	1	43.7	43.3	66	-0.4	10	----	43.3	0.0	5	-5.0
D-12ii	103	1	45.9	45.4	66	-0.5	10	----	45.4	0.0	5	-5.0
D-12iiia	104	1	43.9	43.5	66	-0.4	10	----	43.5	0.0	5	-5.0
D-12iiib	105	1	44.3	43.8	66	-0.5	10	----	43.8	0.0	5	-5.0
D-13ii	106	1	47.2	46.7	66	-0.5	10	----	46.7	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

D-13iii	107	1	43.5	43.1	66	-0.4	10	----	43.1	0.0	5	-5.0
D-15ii	108	1	52.0	51.2	66	-0.8	10	----	51.2	0.0	5	-5.0
D-15iii	109	1	49.9	48.9	66	-1.0	10	----	48.9	0.0	5	-5.0
D-15iv	110	1	48.6	47.7	66	-0.9	10	----	47.7	0.0	5	-5.0
D-15v	111	1	46.4	45.6	66	-0.8	10	----	45.6	0.0	5	-5.0
D-15vi	112	1	45.3	44.8	66	-0.5	10	----	44.8	0.0	5	-5.0
D-15vii	113	1	44.3	43.8	66	-0.5	10	----	43.8	0.0	5	-5.0
D-15viii	114	1	43.7	43.2	66	-0.5	10	----	43.2	0.0	5	-5.0
D-15ix	115	1	42.7	42.3	66	-0.4	10	----	42.3	0.0	5	-5.0
D-15x	116	1	42.1	41.7	66	-0.4	10	----	41.7	0.0	5	-5.0
D-16ii	117	1	52.3	51.5	66	-0.8	10	----	51.5	0.0	5	-5.0
D-16iii	118	1	49.8	49.1	66	-0.7	10	----	49.1	0.0	5	-5.0
D-16iv	119	1	48.3	47.6	66	-0.7	10	----	47.6	0.0	5	-5.0
D-16v	120	1	47.3	46.5	66	-0.8	10	----	46.5	0.0	5	-5.0
D-16vi	121	1	46.3	45.5	66	-0.8	10	----	45.5	0.0	5	-5.0
D-16vii	122	1	44.9	44.3	66	-0.6	10	----	44.3	0.0	5	-5.0
D-16viii	123	1	44.2	43.6	66	-0.6	10	----	43.6	0.0	5	-5.0
D-16ix	124	1	43.4	42.9	66	-0.5	10	----	42.9	0.0	5	-5.0
D-16x	125	1	41.8	41.5	66	-0.3	10	----	41.5	0.0	5	-5.0
D-17iii	126	1	45.2	44.7	66	-0.5	10	----	44.7	0.0	5	-5.0
D-18iii	127	1	44.3	43.9	66	-0.4	10	----	43.9	0.0	5	-5.0
D-19iii	128	1	43.7	43.3	66	-0.4	10	----	43.3	0.0	5	-5.0
D-20iii	129	1	43.5	43.0	66	-0.5	10	----	43.0	0.0	5	-5.0
D-21ii	130	1	52.6	51.3	66	-1.3	10	----	51.3	0.0	5	-5.0
D-21iii	131	1	50.5	49.3	66	-1.2	10	----	49.3	0.0	5	-5.0
D-21iv	132	1	49.2	48.1	66	-1.1	10	----	48.1	0.0	5	-5.0
D-21v	133	1	47.7	46.9	66	-0.8	10	----	46.9	0.0	5	-5.0
D-21vi	134	1	46.6	45.9	66	-0.7	10	----	45.9	0.0	5	-5.0
D-21vii	135	1	46.0	45.3	66	-0.7	10	----	45.3	0.0	5	-5.0
D-21viii	136	1	45.4	44.7	66	-0.7	10	----	44.7	0.0	5	-5.0
D-21ix	137	1	45.2	44.3	66	-0.9	10	----	44.3	0.0	5	-5.0
D-22ii	138	1	52.0	50.9	66	-1.1	10	----	50.9	0.0	5	-5.0
D-22iii	139	1	49.8	48.9	66	-0.9	10	----	48.9	0.0	5	-5.0
D-22iv	140	1	48.7	47.7	66	-1.0	10	----	47.7	0.0	5	-5.0
D-22v	141	1	47.6	46.6	66	-1.0	10	----	46.6	0.0	5	-5.0
D-22vi	142	1	46.9	46.0	66	-0.9	10	----	46.0	0.0	5	-5.0
D-22vii	143	1	46.0	45.4	66	-0.6	10	----	45.4	0.0	5	-5.0
D-22viii	144	1	45.0	44.6	66	-0.4	10	----	44.6	0.0	5	-5.0
D-22ix	145	1	44.3	43.9	66	-0.4	10	----	43.9	0.0	5	-5.0
D-23iii	146	1	46.0	45.5	66	-0.5	10	----	45.5	0.0	5	-5.0
D-24iii	147	1	45.7	45.4	66	-0.3	10	----	45.4	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**Bayfront Parkway Improvements**

D-25iii	148	1	46.4	45.6	66	-0.8	10	----	45.6	0.0	5	-5.0
D-26iii	149	1	46.8	46.1	66	-0.7	10	----	46.1	0.0	5	-5.0
D-27iii	150	1	47.1	46.2	66	-0.9	10	----	46.2	0.0	5	-5.0
D-28iii	151	1	47.2	46.5	66	-0.7	10	----	46.5	0.0	5	-5.0
D-29iii	152	1	47.4	46.5	66	-0.9	10	----	46.5	0.0	5	-5.0
D-30iii	153	1	47.3	46.4	66	-0.9	10	----	46.4	0.0	5	-5.0
D-31iii	154	1	47.5	46.6	66	-0.9	10	----	46.6	0.0	5	-5.0
E-3	155	1	57.2	57.5	66	0.3	10	----	57.5	0.0	5	-5.0
E-1iii	156	1	52.9	52.6	66	-0.3	10	----	52.6	0.0	5	-5.0
E-2ii	157	1	51.5	50.7	66	-0.8	10	----	50.7	0.0	5	-5.0
E-3ii	158	1	54.4	54.0	66	-0.4	10	----	54.0	0.0	5	-5.0
F-1	159	1	55.7	54.4	66	-1.3	10	----	54.4	0.0	5	-5.0
F-2	160	1	58.2	58.1	66	-0.1	10	----	58.1	0.0	5	-5.0
G-1	161	1	58.4	55.9	66	-2.5	10	----	55.9	0.0	5	-5.0
G-3	162	1	53.7	53.6	66	-0.1	10	----	53.6	0.0	5	-5.0
G-4	163	1	58.2	56.8	66	-1.4	10	----	56.8	0.0	5	-5.0
G-5	164	1	55.2	54.2	66	-1.0	10	----	54.2	0.0	5	-5.0
G-1iii	165	1	54.9	54.9	66	0.0	10	----	54.9	0.0	5	-5.0
G-2iii	166	1	46.8	46.7	66	-0.1	10	----	46.7	0.0	5	-5.0
G-3iii	167	1	46.6	46.6	66	0.0	10	----	46.6	0.0	5	-5.0
H-1	168	1	55.5	55.2	66	-0.3	10	----	55.2	0.0	5	-5.0
H-2	169	1	49.6	49.5	66	-0.1	10	----	49.5	0.0	5	-5.0
H-3	170	1	52.7	52.8	66	0.1	10	----	52.8	0.0	5	-5.0
H-1ii	171	1	39.0	38.8	66	-0.2	10	----	38.8	0.0	5	-5.0
F-3	173	1	52.7	51.6	66	-1.1	10	----	51.6	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		172	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							



## Bayfront Parkway Improvements, PennDOT District 1-0 Preliminary Design Traffic Noise Report

### Appendix 7

CD ROM - TNM Files