Highway Noise Technical Report

Reconstruction of the Pell Bridge Approaches

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Executive Summary

This report presents the findings of a noise impact assessment for the Rhode Island Department of Transportation (RIDOT) project to reconfigure a portion of State Route 138 in Newport, Rhode Island and roadways connecting to the local community in support of the Environmental Assessment (EA). The proposed Project would include improvements to the Route 138 mainline alignment, the existing rotary connecting JT Connell Highway and Admiral Kalbfus Road, and the America's Cup Road and Farewell Street intersection. The proposed action would also include a new east-west connector road between State Route 138 and JT Connell Highway, and JT Connell Highway to Third Street.

This highway noise analysis was prepared in accordance with FHWA noise regulations, 23 CFR 772 (Procedures for Abatement of Highway Traffic and Construction Noise), and the Rhode Island Department of Transportation "Noise Abatement Policy" approved June 2011.

Noise abatement must be considered for all Common Noise Environments (CNEs) where design-year build noise levels would approach or exceed the RIDOT noise abatement criteria (NAC) even if the proposed project would reduce future noise conditions. Design-year noise levels approach or exceed the NAC at several CNEs including:

- CNE B – Third Street (South of Van Zandt Avenue)
- CNE D – Cypress Street
- CNE E – JT Connell Highway/Van Zandt Avenue Neighborhood
- CNE K – Bayview Park/King Road

In CNE B, noise abatement would not be feasible and reasonable for residences on Third Street South of Van Zandt. It is not feasible to alter the alignment of Third Street or institute speed or truck restrictions to these local roads and noise barriers are not feasible due to pedestrian access needed for these residences.

In CNE D, a noise barrier would be able to provide at least 5 dBA of insertion loss to 100% of impacted receptors, and provide at least 10 dBA of insertion loss to 89% or benefitted receptors, but would have a CEI of $76,267 which is substantially greater than the $30,000 per benefited receptor criterion. Therefore, the barrier would not be feasible and reasonable and is not recommended for construction.

In CNE E, a noise barrier would be able to provide at least 5 dBA of insertion loss to 100% of impacted receptors however, it could only provide 10 dBA of insertion loss to 49% of benefitted receptors, which is less than the RIDOT criteria of 50%. Additionally, a barrier of this height would have a CEI of $42,193, which is greater than the $30,000 per benefited receptor criterion. Therefore, the barrier would not be feasible and reasonable and is not recommended for construction.

Noise abatement would not be feasible and reasonable for residences on JT Connell Highway in CNE K near Bayview Park. It is not feasible to significantly alter the alignment of JT Connell Highway or institute speed or truck restrictions to these local roads and noise barriers are not feasible due to pedestrian access needed for these residences.

There are no statewide noise regulations that relate to construction activities in Rhode Island. The City of Newport Noise Ordinance prohibits the operation of any construction equipment or conduct any construction activities between the hours of 10:00 p.m. and 7:00 a.m. for residential uses that exceed noise levels (see Table 9).

One of the most effective means to prevent future traffic noise impacts is to promote noise-compatible land use planning for new developments. The compatibility of highways and neighboring local areas is essential for continued growth and can be achieved if local governments and developers require and practice noise-sensitive land-use planning.

Although regulation of land use is not within the purview of RIDOT, there are widely accepted techniques for noise-sensitive land use planning in the vicinity of existing and proposed highway facilities. Local government officials should consider implementing measures such as; locating commercial retail, industrial, manufacturing, warehousing and other noise-compatible land-uses adjacent to highways, incorporating effective traffic noise mitigating features, such as earth berms and solid-mass noise walls, as part of residential developments, utilizing noise-sensitive architectural design and site planning, such as the orientation of quiet spaces away from roadways, and/or requiring the use of sound insulating building materials and construction methods.

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1. Introduction

1.1 Noise Study Overview

This report presents the findings of a noise impact assessment for the Rhode Island Department of Transportation (RIDOT) project to reconfigure a portion of State Route 138 in Newport, Rhode Island, and the roadways connecting to the local community, in support of the Environmental Assessment (EA). This technical report presents a summary of the proposed Project, noise background, regulatory context of the evaluation, noise abatement criteria, methodologies used to predict noise conditions, results of the highway noise assessment in accordance with the RIDOT noise policy and Federal Highway Administration's (FHWA) guidance, noise abatement recommendations, information on construction-period noise, and information for local government officials.

1.2 Project Description

The Claiborne Pell Newport Bridge (Pell Bridge) carries State Route 138 between Jamestown and Newport and is the only road connection between Jamestown and Aquidneck Island. The Proposed Action Alternative of the Pell Bridge Interchange Project (Project) would provide direct connection from the northern part of the City to the downtown area, reduce queued vehicle traffic onto the Pell Bridge, reduce traffic in downtown Newport, and provide a portion of the bicycle and pedestrian facilities envisioned in the Aquidneck Island Transportation Study. The Proposed Action (Project) would occur in the City of Newport and Town of Middletown, Rhode Island. In accordance with the National Environmental Policy Act (NEPA), an Environmental Assessment (EA) is being developed to evaluate the impacts of construction and operation of the redesigned interchange on environmental resources.

2. Noise Background and Criteria

This section presents background on noise including the metrics used to describe noise conditions, the regulatory context of the highway noise study and the criteria used to assess potential highway noise effects and evaluate the need for noise abatement.

2.1 Noise Descriptors

Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human response are (1) intensity or level, (2) frequency content and (3) variation with time. The first parameter is determined by how greatly the sound pressure fluctuates above and below the atmospheric pressure, and is expressed on a compressed scale in units of decibels. By using this scale, the range of normally encountered sound can be expressed by values between zero and 120 decibels. On a relative basis, a three-decibel change in sound level generally represents a barely-noticeable change outside the laboratory, whereas a 10-decibel change in sound level would typically be perceived as a doubling (or halving) in the loudness of a sound.

The frequency content of sound is related to the tone or pitch and is expressed based on the rate of the air pressure fluctuation in terms of cycles per second (called Hertz and abbreviated as Hz). The human ear can detect a wide range of frequencies from about 20 Hz to 17,000 Hz. However, because the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound levels, and are expressed in decibel notation as "dBA." The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise.

Because sound levels fluctuate from moment to moment, it is important to characterize the range of levels that may exist over a period of time. This is commonly done by using the following sound level metrics:

- **Lmax** is the maximum instantaneous A-weighted sound level. The Lmax represents the highest sound level generated by a source.
- **Leq** is the energy-average sound level. The Leq is a single value that is equivalent in sound energy to the fluctuating levels over a period of time. Leq is commonly used to describe environmental noise and relates well to human annoyance.
- Statistical sound levels such as L10, L50, L90 describe the sound level which are exceeded for that percent of time during a given time period. For example, the L10 sound level represents the higher end of the range of sound levels since sound only exceeds that level 10% of the time. Conversely, the L90 sound level represents the lower end of the range of sound levels.

Because sound levels are measured in decibels, adding sound levels is not linear. For example, when there are two equal sources of sound added together, the overall level increases 3 dB (e.g., 60 dB plus 60 dB equals 63 dB). Additionally, research indicates the following general relationships between A-weighted sound level and human perception:

- A 3-dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person.
- A 10-dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person.

Figure 1 shows typical A-weighted maximum noise levels for common outdoor and indoor noise sources.

Outdoor Sound Levels	Sound Level dB(A)	Indoor Sound Levels
	110	Rock Band at 5 m
Jet Over Flight at 300 m	105	
	100	Inside New York Subway Train
Gas Lawn Mower at 1 m	95	
	90	Food Blender at 1 m
Diesel Truck at 15 m	85	
Noisy Urban Area—Daytime	80	Garbage Disposal at 1 m
	75	Shouting at 1 m
Gas Lawn Mower at 30 m	70	Vacuum Cleaner at 3 m
Suburban Commercial Area	65	Normal Speech at 1 m
	60	
Quiet Urban Area—Daytime	55	Quiet Conversation at 1 m
	50	Dishwasher Next Room
Quiet Urban Area—Nighttime	45	
	40	Empty Theater or Library
Quiet Suburb—Nighttime	35	
	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime	25	Empty Concert Hall
Rustling Leaves	20	
	15	Broadcast and Recording Studios
	10	
	5	
Reference Pressure Level	0	Threshold of Hearing

Source: FHWA, 1980.

Figure 1. Typical A-weighted Sound Levels

2.2 Regulatory Context

This highway noise analysis was prepared in accordance with FHWA noise regulations, 23 CFR 772 (Procedures for Abatement of Highway Traffic and Construction Noise), and the Rhode Island Department of Transportation "Noise Abatement Policy" approved June 2011.

2.2.1 FHWA Noise Regulation and RIDOT Noise Policy

FHWA regulation 23 CFR 772 describes the procedures required for highway noise studies to help protect the public health and welfare, to supply abatement criteria, and to establish the requirements for information to be given to local officials for use in the planning and design of highways that are funded or otherwise subject to FHWA approval. This federal regulation requires RIDOT to have a noise policy that implements the requirements of the regulation.

The RIDOT highway noise policy[1] applies to all highway construction projects that receive federal aid or are otherwise approved by the FHWA. A Type I project is defined as one that includes construction of a highway on new location, the physical alteration of an existing highway that results in substantial horizontal or vertical alterations, the addition of through-traffic lanes, the addition of auxiliary lanes, the addition or relocation of interchange lanes or ramps, restriping to add through-lane capacity, or substantial alterations to toll plaza, or rest stops. Substantial vertical alteration is defined as changes to a highway elevation that would expose line-of-sight between a receptor and the traffic noise sources. Substantial horizontal alteration is defined as relocating a highway so that the distance between the highway and the closest receptor is half that of the existing condition. If any portion of a project is determined to be a Type I project, then the entire project area is considered a Type I project.

A Type II project is a voluntary project that receives federal-aid involving the construction of highway noise barriers on existing highways where there are no capacity improvements. RIDOT has a voluntary Type II Noise Abatement Program which is implemented in accordance with FHWA requirements and as state funding is available.

The proposed Project meets the definition of a Type I highway project due to the addition of through-traffic lanes and substantial alteration of existing roadways.

[1] Rhode Island Department of Transportation Noise Abatement Policy (effective June 2011)

2.3 Noise Impact and Abatement Criteria

This section describes the noise abatement criteria that apply to the proposed project.

2.3.1 RIDOT Noise Abatement Criteria

FHWA has established NAC to help protect public health, welfare and livability from excessive vehicle traffic noise. The NAC are considered the upper limit of acceptable highway traffic noise for different types of land use Activity Categories. The NAC focus on levels where highway traffic noise could potentially interfere with speech communication in exterior areas and are used to evaluate whether noise abatement is needed for exterior areas of frequent human use.

In accordance with FHWA regulations, noise is evaluated at existing sensitive uses and tracts of land that have already been permitted for sensitive use. If tracts of land are not permitted for sensitive use, they are not eligible for potential noise mitigation, but future noise conditions may be evaluated for informational and development planning purposes.

Table 1 shows the FHWA Activity Categories, the description of the type of land use within the category, and the NAC based on loudest-hour Leq noise levels. When noise levels approach or exceed the NAC, then abatement must be considered. These abatement criteria apply to design-year noise conditions for a proposed Project regardless of whether the proposed Project would increase or decrease noise conditions compared to the existing or No Action condition.

RIDOT implements the NAC by defining that "approaching the NAC" means noise levels are 1 dBA below the NAC criteria. For example, if design-year noise levels would be 66 dBA (Leq) at a residential receptor, that would approach the NAC of 67 dBA (Leq) and noise abatement must be considered.

RIDOT also defines a substantial increase in noise as an increase in design-year noise levels that is greater than 10 dBA compared to existing levels. A substantial noise increase does not depend on whether the design-year noise levels approach or exceed the absolute NAC.

Potential noise abatement measures must be considered include for areas where noise levels approach or exceed the NAC. Further information on noise abatement is presented in Section 6.

Table 1. FHWA Noise Abatement Criteria (NAC)

Activity Category	Loudest-Hour Noise Level (Leq)	Description of 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 purposes.
B*	67 (Exterior)	Residential.
C*	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare 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 Categories A-D or F.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

*Includes undeveloped lands permitted for this Activity Category

Source: 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise.

2.3.1 Section 4(f) Noise Assessment Criteria

Section 4(f) of the U.S. DOT Act of 1966 requires consideration of parks and recreation lands and is codified in 23 U.S.C 138 and 49 U.S.C. 303. FHWA and FTA implement the requirements of Section 4(f) in regulation 23 CFR 774. As part of a potential constructive use determination, the projected noise level increase attributed to the proposed project that may substantially interfere with the use and enjoyment of a Section 4(f) property must be considered. Unlike the absolute Noise Abatement Criteria that are used to assess the need for mitigation under RIDOT noise policy and 23 CFR 772, the key evaluation for 4(f) properties is whether the difference between the No-Action and With-Action conditions would result in a significant change in noise and would exceed the NAC.

The projected noise level increase attributed to the project which may interfere with the use and enjoyment of a noise-sensitive facility must be considered as part of a potential constructive use determination.

The types of situations that FHWA has determined a noise-related constructive use would occur include 1) if a project would affect the ability to hear a performance at an outdoor amphitheater, 2) to sleep in a campground, 3) to enjoy a historic site where quiet is a recognized attribute of the site's significance, 4) to enjoy an urban

park where serenity and quiet are significant attributes, or 5) to view wildlife in an area intended for such.

The FHWA has determined that a noise-related constructive use does not occur 1) if the predicted noise levels with the proposed project do not exceed the FHWA Noise Abatement Criteria (NAC) or 2) if the increase in noise due to the proposed project (compared to the No-Build condition) is 3 dBA or less even if the noise levels do exceed the FHWA thresholds.

3. Noise Prediction Methodology

The methodology for evaluating noise includes identifying noise-sensitive land use, conducting measurements at key receptor locations and modeling noise at all receptors within the study areas. The Study Area includes a diversity of land uses including residential, commercial, and institutional buildings. Receptors and their associated land use have been identified using statewide parcel and land use code data, aerial photography, and field visits.

Noise receptors are primarily located at ground-level outdoor areas of frequent human use. If an upper-floor multi-family residence has exterior areas such as balconies or roof decks, then receptors will be located at these upper elevations. For some institutional facilities, including hospitals and schools, (Activity Category D) receptors may be located inside the building if there are no areas of frequent outdoor human use.

Common Noise Environments (CNE) have been identified to represent these noise sensitive areas. CNEs are groups of receptors within the same NAC category that are exposed to similar noise sources and levels, have similar traffic volumes, mix and speed, and have similar topographic features. The Study Area has been subdivided into 13 CNEs containing receptor locations that are sensitive to highway noise.

Table 2 presents the CNE areas and the numbers of dwelling units for Activity Category B, number of locations for Activity Category D, and number of units for Activity Category E, represented by each area. The CNE areas, which predominately include outdoor ground level areas between the roadways and the buildings, are shown in Figure 2

Most of the receptor locations fall into the FHWA's Activity Category B or C, which have an NAC of 67 dBA (Leq). Other land uses within the Study Area, such as hotels and offices, are in FHWA Activity Category E which has a noise abatement criterion of 72 dBA. The Newport Community College and the Newport Naval Health Clinic include interior FHWA Activity Category D receptor locations which have an interior noise abatement criterion of 52 dBA. The Study Area also includes FHWA Activity Category F industrial receptors which are not considered to be sensitive to highway noise.

Noise monitoring was conducted to characterize existing sound levels in the Pell Bridge study area. Noise monitoring was conducted at 19 receptor locations which are representative of noise exposure throughout the Study Area. Noise measurements were collected in two sessions during December 2017 and June 2018

in conformance with FHWA noise monitoring guidelines.[2.] Traffic counts were conducted during the measurements including volumes, vehicle mix (automobiles, medium trucks, and heavy trucks), and observations of operating speeds. The predominant noise source in the Study Area included vehicles on the Pell Bridge approach (State Route 138) and other major roadways such as Admiral Kalbfus Road and JT Connell Highway.

Existing (2017) and design-year build (2040) noise levels have been predicted using the FHWA's Traffic Noise Model (TNM) version 2.5. The existing TNM model has been validated by comparing to the measurement results. Figure 2 presents the location of the noise monitoring sites.

Table 2. Common Noise Environments and Receptors

Common Noise Environment (CNE)	Activity Category	Areas	Category B Dwelling Units	Category C/D Locations	Category E Units
A	B	America's Cup Ave/ Farewell St Area	7	0	0
B	B	Third St Area (South of Van Zandt Ave)	38	0	0
C	B/C	Sycamore St Area	43	2	0
D	B	Cypress St Area	9	0	0
E	B	JT Connell/Van Zandt Neighborhood	59	0	0
F	B/C	Third St Area (North of Van Zandt Ave)	131	1	0
G	D	Newport Naval Health Clinic	0	1	0
H	B	Rolling Green Apartments	80	0	0
I	E	Mainstay Hotel	0	0	180
J	B/C/D/E	Newport Community College/Reliance Row	24	2	123
K	B	Bayview Park/King Road Area	37	0	0
L	B	JT Connell Highway (north extent)	50	0	0
M	C	Braman Cemetery and Island Cemetery	0	1	0

Source: VHB, 2018

[2] *Measurement of Highway-Related Noise*, US Department of Transportation, Federal Highway Administration, FHWA-PD-96-046, May 1996.

4. Existing Conditions

This section of the report includes a description of the existing noise conditions in the study area. Existing conditions have been evaluated based on noise measurements and a validated TNM

4.1 Existing Noise Conditions

4.1.1 Noise Measurement Results

Noise monitoring has been conducted at specific locations where measurements can be used to validate noise predictions from TNM. The measurements will validate the accuracy of the TNM when results are within 3 dBA. If the measurements and modeling are not within 3 dBA, the model may need adjustment (i.e. including terrain lines or intervening buildings).

Table 3 presents the results of the noise monitoring and the predicted results from the TNM at the monitoring locations with the traffic conditions that existed during the measurements. As shown in Table 3, the results are within 3 dBA at all locations and the existing TNM is considered to provide accurate results.

Table 3. Noise Model Validation Data

		Noise Levels dBA		
Site	**Location**	**Measured**	**Predicted**	**Difference**
M1	Braman Cemetery (Farewell St)	50.5	53.3	2.8
M2	Braman Cemetery (setback)	63.9	65.8	1.9
M3	Bayside Avenue	63.4	64.8	1.4
M4	Cypress Street	66.1	63.5	-2.6
M5	Utility Road	56.4	55.6	-0.8
M6	JT Connell Highway	59.6	58.2	-1.4
M7	3rd Street	52.6	51.1	-1.5
M8	Dyers Gate Road	61.8	59.1	-2.7
M9	The Admiralty Apartments	61.9	59.6	-2.3
M10	Mainstay Hotel	55.1	52.2	-2.9
M11	Butler Street	60.6	57.7	-2.9
M12	Prescott Hall Road	59.9	57.3	-2.6
M13	Hunter Park	54.0	56.5	2.5
M14	249 JT Connell Highway	63.3	60.7	-2.6
M15	M15 – Coddington Field	57.3	54.6	-2.7
M16	M16 – 16 Reliance Row	61.1	58.7	-2.4
M17	M17 – 80 Bayview Park	64.1	61.9	-2.2
M18	M18 – 101 Lexington Street	64.1	61.4	-2.7
M19	M19 – 23 King Road	53.4	54.3	0.9

Note Difference is the predicted level minus monitored level.

4.1.2 Existing Noise Predictions

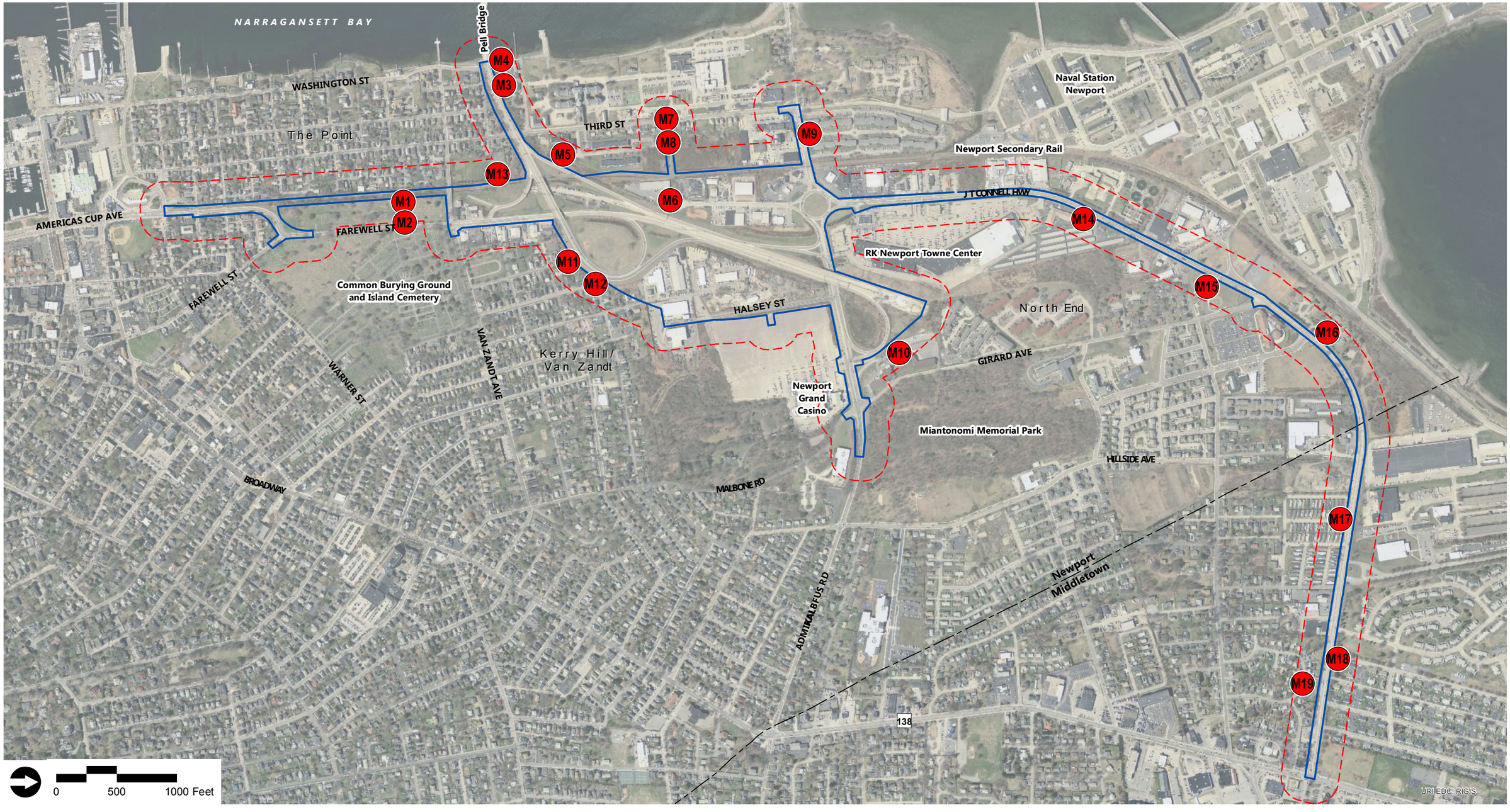
Existing (2017) traffic data was incorporated into the validated TNM model and was used to calculate the existing noise levels at all receptor locations in the study area. The results presented in Table 4 summarize the range of existing noise levels at noise-sensitive land uses within each CNE. The highest noise levels generally occur at front-row receptors adjacent to major roadways such as Route 138 and Admiral Kalbfus Road, and the lower noise levels occur farther from highways and/or behind intervening objects such as terrain lines and buildings.

The results of the existing noise analysis demonstrate that exterior noise levels range from 35 to 67 dBA at all receptors. Interior noise levels at Category D receptors (Newport Naval Health Clinic and Newport Community College) are 28 dBA or lower.

Table 4. Existing Noise Level Summary

CNE	Activity Category	Location	Existing Noise Levels (dBA, Leq)
A	B	America's Cup Avenue/ Farewell Street	56-61
B	B	Third Street (South of Van Zandt Avenue)	48-66
C	B/C	Sycamore Street	53-63
D	B	Cypress Street	60-65
E	B	JT Connell Highway/Van Zandt Avenue	46-63
F	B/C	Third Street (North of Van Zandt Avenue)	51-60
G	D	Newport Naval Health Clinic	50 (15 interior) [A]
H	B	Rolling Green Apartments	60
I	E	Mainstay Hotel	55
J	B/C/D/E	Newport Community College/Reliance Row	46-63 (28 interior) [A]
K	B	Bayview Park/King Road	45-67
L	B	JT Connell Highway (north extent)	47-59
M	C	Braman Cemetery and Island Cemetery	51-64

Source: VHB, 2018.



Source: RIDOT, RIGIS, VHB Surveys conducted August 6-8, 2018

Legend

- Measurement Location
- Project Limits
- Study Area
- Municipal Boundary

Figure 2

Noise Measurement Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island

5. Noise Analysis

5.1 No Action Conditions

No Action noise levels would be similar to Existing Conditions ranging from 35 to 67 dBA Leq at all receptors. General background growth in traffic volumes would result in a small increase in noise of approximately 0.2 to 0.3 dBA. Table 3 summarizes the range of No Action noise levels at each CNE.

Table 5. Existing Noise Level Summary

CNE	Activity Category	Location	No-Action Noise Levels (dBA, Leq)
A	B	America's Cup Avenue/ Farewell Street	56-61
B	B	Third Street (South of Van Zandt Avenue)	49-67
C	B/C	Sycamore Street	53-64
D	B	Cypress Street	60-66
E	B	JT Connell Highway/Van Zandt Avenue	47-63
F	B/C	Third Street (North of Van Zandt Avenue)	51-60
G	D	Newport Naval Health Clinic	50 (15 interior) [A]
H	B	Rolling Green Apartments	60
I	E	Mainstay Hotel	55
J	B/C/D/E	Newport Community College/Reliance Row	46-64 (29 interior) [A]
K	B	Bayview Park/King Road	46-67
L	B	JT Connell Highway (north extent)	47-59
M	C	Braman Cemetery and Island Cemetery	51-64

A Interior sound level in parenthesis assuming 35 dBA outdoor-to-indoor noise reduction for masonry building with double-pane windows.

Source: VHB, 2018.

5.2 Noise Analysis Results

This section presents the results of the highway noise analysis for the design-year build (2040) traffic volumes. Design-year build noise levels in each CNE have been assessed according to the NAC. Table 6 presents the range of design-year build noise levels, the applicable NAC, and an assessment of whether noise levels would approach or exceed the NAC.

Table 6. Design-Year Noise Level Summary

CNE	Activity Category	Location	Noise Levels (Leq, dBA)		Approach or Exceeds NAC
			Design-Year Build	NAC	
A	B	America's Cup Avenue/ Farewell Street	54-58	67	No
B	B	Third Street (South of Van Zandt Avenue)	**48-66**	67	**Yes**
C	B/C	Sycamore Street	55-65	67/67	No
D	B	Cypress Street	**62-68**	67	**Yes**
E	B	JT Connell Highway/Van Zandt Avenue	**54-70**	67	**Yes**
F	B/C	Third Street (North of Van Zandt Avenue)	54-62	67	No
G	D	Newport Naval Health Clinic	52 (17 interior) [A]	52 (interior)	No
H	B	Rolling Green Apartments	60	67	No
I	E	Mainstay Hotel	55	72	No
J	B/C/D/E	Newport Community College/Reliance Row	47-65 (33 interior) [A]	67/67/52 (interior)/72	No
K	B	Bayview Park/King Road	**46-67**	67	**Yes**
L	B	JT Connell Highway (north extent)	48-61	67	No
M	C	Braman Cemetery and Island Cemetery	53-64	67	No

A Interior sound level in parenthesis assuming 35 dBA outdoor-to-indoor noise reduction for masonry building with double-pane windows.

Source: VHB, 2018.

Design-year noise levels would approach or exceed the NAC or there would be a substantial increase in noise of 10 dBA of greater at a total of 21 residential receptors. Design-year noise levels approach or exceed the NAC or exceed the substantial increase criterion at several CNEs including:

- CNE B – Third Street (South of Van Zandt Avenue)
- CNE D – Cypress Street
- CNE E – JT Connell Highway/Van Zandt Avenue Neighborhood
- CNE K- Bayview Park/King Road

Noise abatement must be considered for all CNEs where design-year build noise levels would exceed the NAC even if the proposed project would reduce future noise conditions.

The following describes the noise analysis results for each CNE.

5.2.1 CNE A – America's Cup Avenue/ Farewell Street

CNE A encompasses the neighborhood south of the existing America's Cup Avenue and Farewell Street intersection as shown in Figure 3. Noise-sensitive receptors in this area are primarily single-family residences. Existing noise levels range from 56 to 61 dBA and design-year noise levels range from would range from 54 to 58 dBA. Receptors in this area will generally experience a decrease in sound level as proposed improvements to the America's Cup Avenue and Farewell Street intersection would relocate America's Cup Avenue further away from select

receptors. Design-year noise levels would not approach or exceed the NAC for Activity Category B (67 dBA) and therefore a noise abatement analysis is not warranted. See Table 12 for noise level results at each receptor.

5.2.2 CNE B – Third Street (South of Van Zandt Ave)

CNE B includes receptors nearest to Farewell St and America's Cup Avenue along the neighborhoods off Third Street south of Van Zandt Avenue, as shown in Figure 3. Noise-sensitive receptors in this area are primarily single-family residences. Existing noise levels range from 48 to 66 dBA and design-year noise levels would also range from 48 to 66 dBA. The design-year noise level at one receptor (B37) would approach the NAC for Activity Category B (67 dBA) due to noise from Van Zandt Avenue and therefore a noise abatement analysis is warranted. See Table 13 for noise levels at each receptor.

5.2.3 CNE C – Sycamore Street

CNE C includes the neighborhood located between the existing Pell Bridge and Van Zandt Avenue as shown in Figure 4. Noise-sensitive receptors in this area are primarily Activity Category B, single-family residences, as well as Activity Category C including Hunter Park and a public dock. Existing noise levels at residences in this area range from 53 to 63 dBA and design-year noise levels would range from 55 to 65 dBA. At Hunter Park, existing noise levels are 56 dBA and design-year noise levels range from 58 to 59 dBA. Design-year noise levels do not approach or exceed the NAC for Activity Category B or C (67 dBA) and therefore a noise abatement analysis is not warranted. See Table 14 for noise level results at each receptor.

5.2.3.1 Section 4(f) Noise Impact Assessment

Hunter Park (C44-C45), the proposed Dog Park off JT Connell Highway (C46), and the Van Zandt Pier (C47) are public parks and recreation land and are therefore considered as Section 4(f) resources. Noise levels at Section 4(f) properties in CNE C would range from 53 to 59 dBA in the No Build alternative and 55 to 61 dBA in the Build alternative. Design-year noise levels would not approach or exceed the NAC for Activity Category C (67 dBA), would not increase by more than 3 dBA, and would therefore not result in a constructive use due to noise.

5.2.4 CNE D – Cypress Street

CNE D includes the neighborhood located between the existing Pell Bridge and Cypress Street as shown in Figure 4. Noise-sensitive receptors in this area are primarily single-family residences. Existing noise levels range from 60 to 65 dBA and design-year noise levels range from 62 to 68 dBA. Design-year noise levels would approach or exceed the NAC for Activity Category B (67 dBA) at five residences (D1, D3, D5, D6, and D7) and therefore a noise abatement analysis is warranted. See Table 15 for noise levels at each receptor.

5.2.5 CNE E – JT Connell Highway/Van Zandt Avenue Neighborhood

CNE E includes the neighborhoods bounded by JT Connell Highway, Van Zandt Avenue and the existing State Route 138 as shown in Figure 5. Noise-sensitive receptor in this area are primarily single-family residences. Several receptors in this CNE are adjacent to the proposed relocation of State Route 138 and its connection to Admiral Kalbfus Road. There would be two acquisitions as part of the proposed project (E50 and E51). Existing noise levels in this area range from 46 to 63 dBA and design-year noise levels would range from 54 to 70 dBA. Design-year noise levels will approach or exceed the NAC for Activity Category B (67 dBA) at four receptors (E45, E46, E47, and E49), as well as RIDOT's Significant Increase criterion of 10 dBA at nine receptors (E48, and E52 to E59). Therefore, a noise abatement analysis is warranted for CNE E. See Table 16 for noise levels at each receptor.

5.2.6 CNE F – Third Street (North of Van Zandt Avenue)

CNE F includes receptors along Third Street between Van Zandt Avenue and Admiral Kalbfus Road as shown in Figure 6. Noise-sensitive receptors in this area are primarily single-family residences but also include larger multi-family units such as the Bayside Village Associates apartment buildings. Existing noise levels in this area range from 51 to 60 dBA and design-year noise levels range from 54 to 62 dBA. Design-year noise levels would not approach or exceed the NAC for Activity Category B (67 dBA) and therefore a noise abatement analysis is not warranted. See Table 17 for noise levels at each receptor.

5.2.6.1 Section 4(f) Noise Impact Assessment

The playground located at 143 Third Street is a public park and recreation land use and is therefore considered a Section 4(f) resource. No Build noise levels would be 60 dBA and Build alternative noise levels would be 63 dBA. Design-year noise levels would not approach or exceed the NAC for Activity Category C (67 DBA), would not increase by more than 3 dBA, and would therefore not result in a constructive use due to noise.

5.2.7 CNE G – Newport Naval Health Clinic

CNE G includes the Newport Naval Health Clinic, shown in Figure 6. This outpatient clinic, which does not include overnight patient facilities, is a Category D facility and is evaluated for interior noise. The facility is set back from major roadways in the project area and its primary source of noise comes from traffic on Third Street. Exterior existing noise levels are 50 dBA and interior noise levels have a 15 dBA contribution from highway sources, assuming 35 dBA of outdoor-to-indoor noise reduction from a large masonry building. Exterior design-year noise levels would be 53 dBA and the interior noise level contribution from highway noise would 18 dBA. Design-year noise levels would not approach or exceed the interior NAC for Activity Category D (52 dBA) and therefore a noise abatement analysis is not warranted. See Table 18 for noise level results at each receptor.

5.2.8 CNE H – Rolling Green Apartments

CNE H includes the Rolling Green Apartments located off Admiral Kalbfus Road shown in Figure 6. The Rolling Green Apartments are Category B, multi-family residences. Both existing and design-year noise levels are 60 dBA. Design-year noise levels would not approach or exceed the NAC (67 dBA) and therefore a noise abatement analysis is not warranted. See Table 19 for noise level results at each receptor.

5.2.9 CNE I – Mainstay Hotel

CNE I includes the area along Admiral Kalbfus Highway, east of the existing Route 238 northbound ramp to Route 138, as shown in Figure 7. Noise-sensitive receptors in this area include the Mainstay Hotel and Conference Center (I1) which is considered an Activity Category E receptor. Existing and design-year noise levels at the hotel are 55 dBA. Design-year noise levels would not approach or exceed the NAC (72 dBA) and therefore a noise abatement analysis is not warranted. See Table 20 for noise level results at each receptor.

5.2.10 CNE J – Newport Community College/ Reliance Row

CNE J includes the Newport Community College (NCC) (J19) as shown in Figure 8. NCC is an Activity Category D receptor and has been evaluated at noise-sensitive areas with indoor use such as classrooms. Existing exterior noise levels at NCC are 63 dBA and 28 dBA interior assuming 35 dBA outdoor-to-indoor sound attenuation of the building based on masonry construction with double-pane windows[3]. Exterior design-year noise levels would be 68 dBA and interior noise levels would be 33 dBA. Interior design-year noise levels would be well below the Category D NAC (52 dBA) and therefore noise abatement is not warranted.

CNE J also includes residences along Reliance Row (J21, J22), the Leal Terrace neighborhood, the Pineapple Inn (J20) and Motel 6 (J1) hotels along JT Connell Highway, and Coddington Field (J18). Noise-sensitive receptors along Reliance Row include Category B, multi-family residences. Existing noise levels in this area range from 57 to 58 dBA and design-year noise levels range from 59 to 60 dBA. Noise-sensitive receptors in the Leal Terrace neighborhood include Category B, single-family residences with existing noise levels ranging from 46 to 54 dBA and design-year noise levels ranging from 47 to 56 dBA. The Pineapple Inn and the Motel 6 are hotels and are evaluated as Category E receptors. Existing noise levels at these receptors range from 55 to 61 dBA and design-year noise levels range from 58 to 62

[3] *Analysis and Abatement Guidance*, U.S. Department of Transportation, Federal Highway Administration. 27 December 2017. https://www.fhwa.dot.gov/Environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/polguide02.cfm . Accessed September, 2018.

dBA. Coddington Field is a Category C receptor with an existing noise level of 58 dBA and a design-year noise level of 60 dBA. Design-year noise levels would not approach or exceed the NAC for Activity Category B (67 dBA), Category C (67 dBA), or Category E (72 dBA), and therefore a noise abatement analysis is not warranted. See Table 21 for noise level results at each CNE J receptor.

5.2.10.1 Section 4(f) Noise Impact Assessment

Coddington Field (J18) is a public park with recreational use and is therefore considered as a Section 4(f) resources and analyzed for potential noise impact. Noise levels at Coddington Field would be 58.4 dBA in the No-Action alternative and 60.3 as part of the proposed Action. The noise increase at this location is less than 3 dBA, and noise levels in the proposed Action would not exceed the NAC for Activity Category C (67 DBA) and would therefore not result in a constructive use due to noise.

5.2.11 CNE K – Bayview Park/King Road

CNE K includes the neighborhoods located off JT Connell Highway at the north extent of the project area including residences located on King Road and the mobile home area located on Bayview Park, as shown in Figure 9. Existing noise levels in this area range from 46 to 67 dBA and design-year noise levels range from 46 to 67 dBA. Design-year noise levels would approach or exceed the NAC for Activity Category B (67 dBA) at two receptors (K4 and K7) and therefore a noise abatement analysis is warranted. See Table 22 for noise level results at each receptor.

5.2.12 CNE L – JT Connell Highway (north extent)

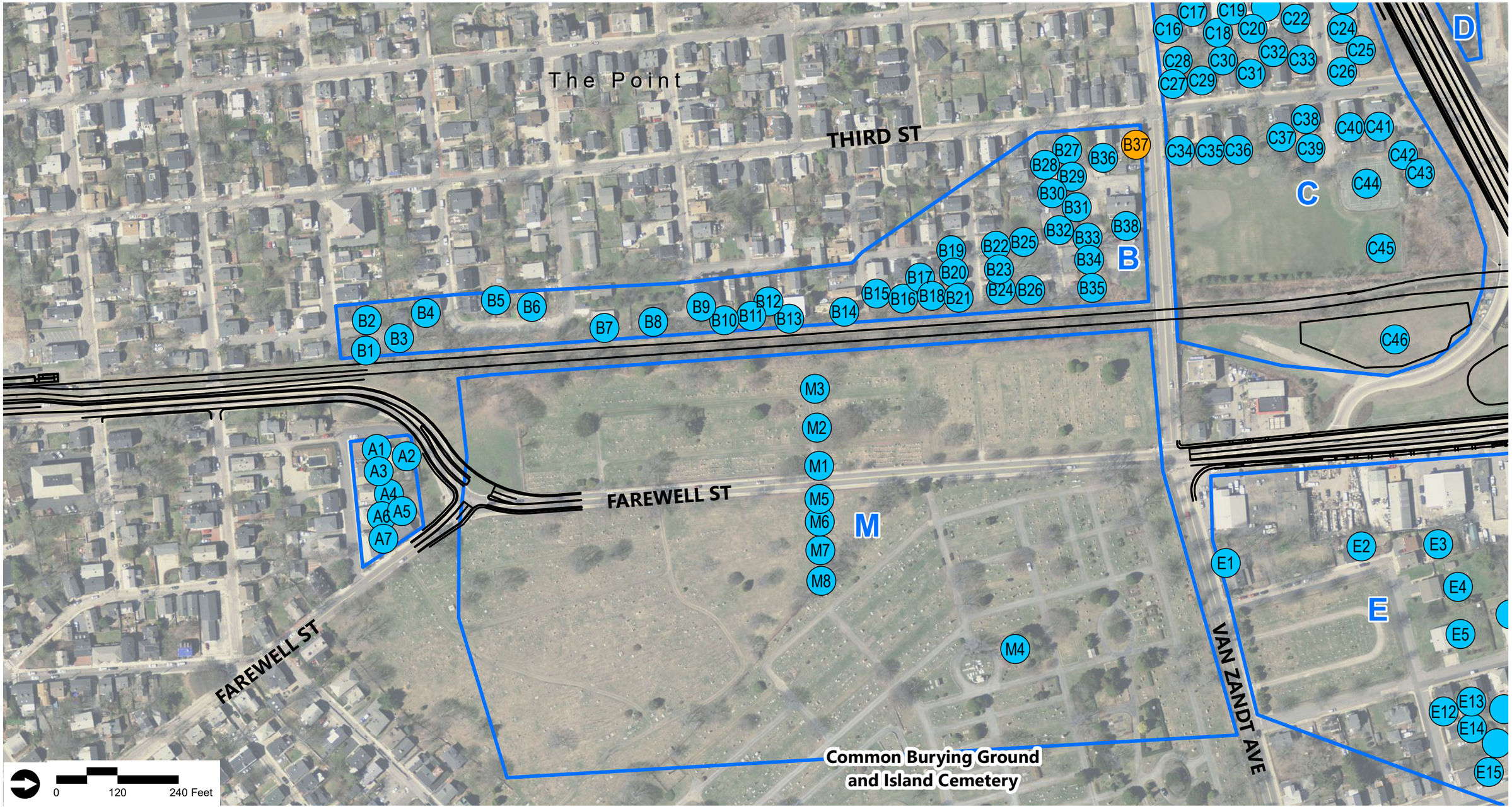
CNE L includes the neighborhoods located off JT Connell Highway at the north extent of the project area including residences along Jones Street, Lexington Street, Niagara Street, and Lawrence Street as shown in Figure 9. Noise-sensitive receptors in this area are made up of primarily multi-family residences. Existing noise levels in this area range from 47 to 59 dBA and design-year noise levels would range from 48 to 61 dBA. Design-year noise levels would not approach or exceed the NAC for Activity Category B (67 dBA) and therefore a noise abatement analysis is not warranted. See Table 23 for noise level results at each receptor.

5.2.13 CNE M – Braman Cemetery and Island Cemetery

CNE M includes the Braman Cemetery as well as the Common Burying Ground and Island Cemetery, located off of Farewell Street and Van Zandt Avenue as shown in Figure 3. Cemeteries are included as an Activity Category C land use in which quiet is integral to the preservation of its land use. Existing noise levels in this area range from 51 to 64 dBA and design-year noise levels would range from 53 to 64 dBA. Design-year noise levels would not approach or exceed the NAC for Activity Category C (67 dBA) and therefore a noise abatement analysis is not warranted. See Table 24 for noise level results at each receptor.

5.2.13.1 Section 4(f) Noise Impact Assessment

Both the Braman Cemetery and the Common Burying Ground and Island Cemetery are historic resources and are therefore considered as Section 4(f) resources. No Build noise levels would range from 51 to 64 dBA and Build noise levels would range from 53 to 65 dBA. Design-year noise levels would not approach or exceed the NAC for Activity Category C (67 dBA), would not increase by more than 3 dBA, and would therefore not result in a constructive use due to noise.



Source: RIDOT, RIGIS

Legend

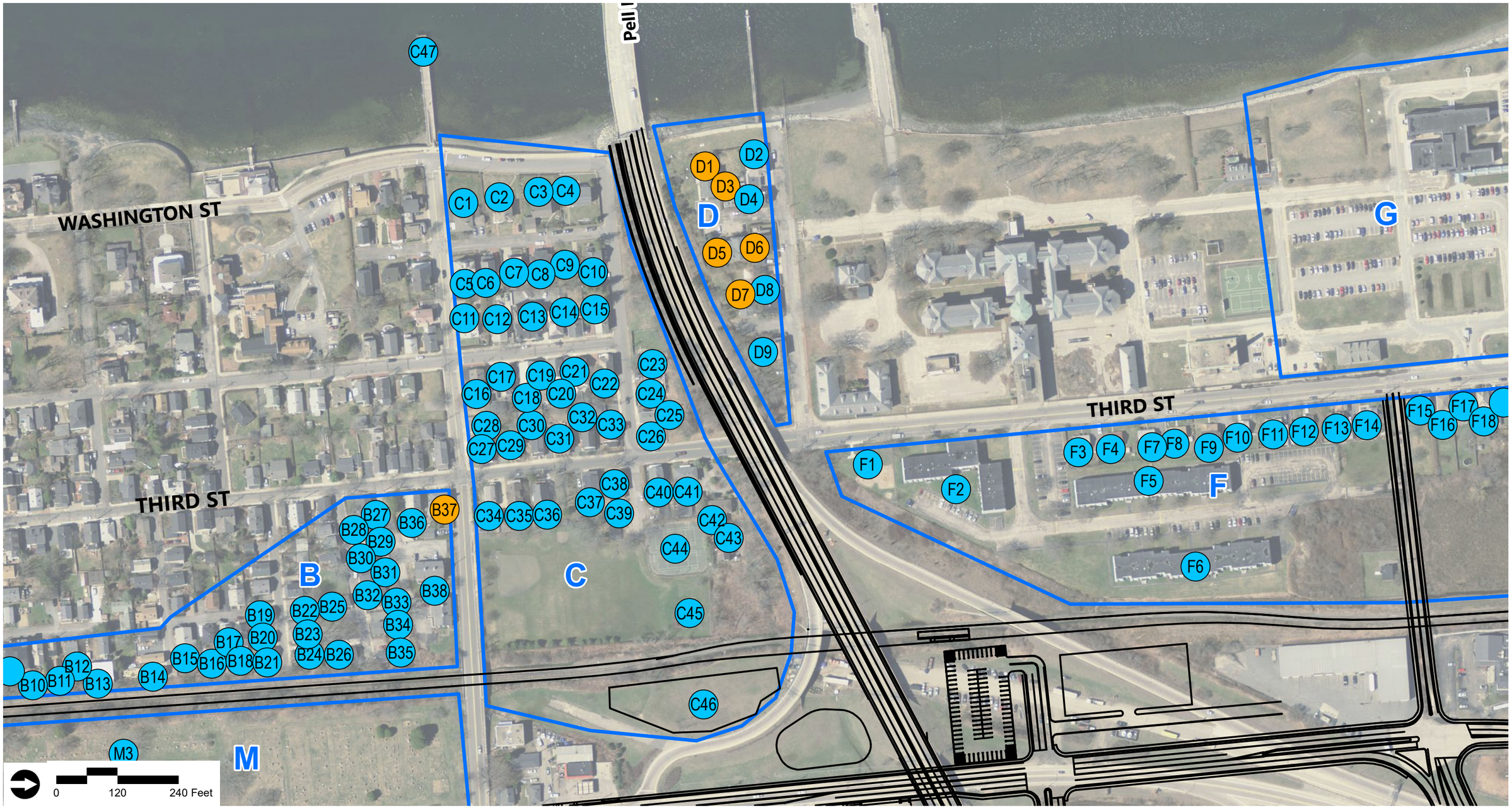
- No Impact
- Noise Impact
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 3

CNE A, B, M - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island

\\vhb\GIS\proj\Providence\72900.00\gis\Project\Noise\Figure X.X Noise Receptor Locations (Tech Report-Oct 2019).mxd



Source: RIDOT, RIGIS

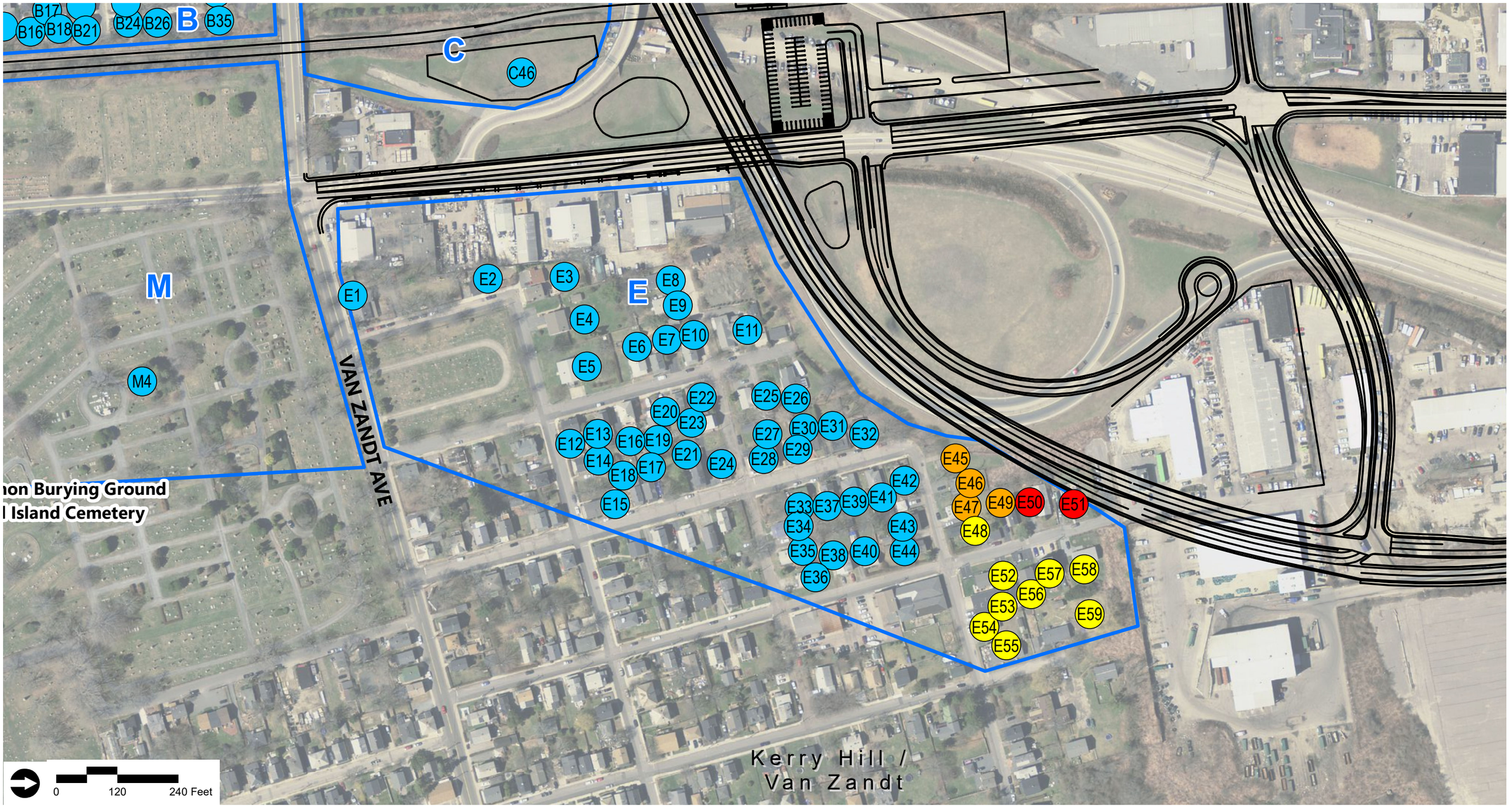
Legend

- No Impact
- Noise Impact
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 4

CNE C, D - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island



Source: RIDOT, RIGIS

Legend

- No Impact
- Noise Impact
- Substantial Increase
- Parcel Acquisition
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 5

CNE E - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island

Source: RIDOT, RIGIS

Legend

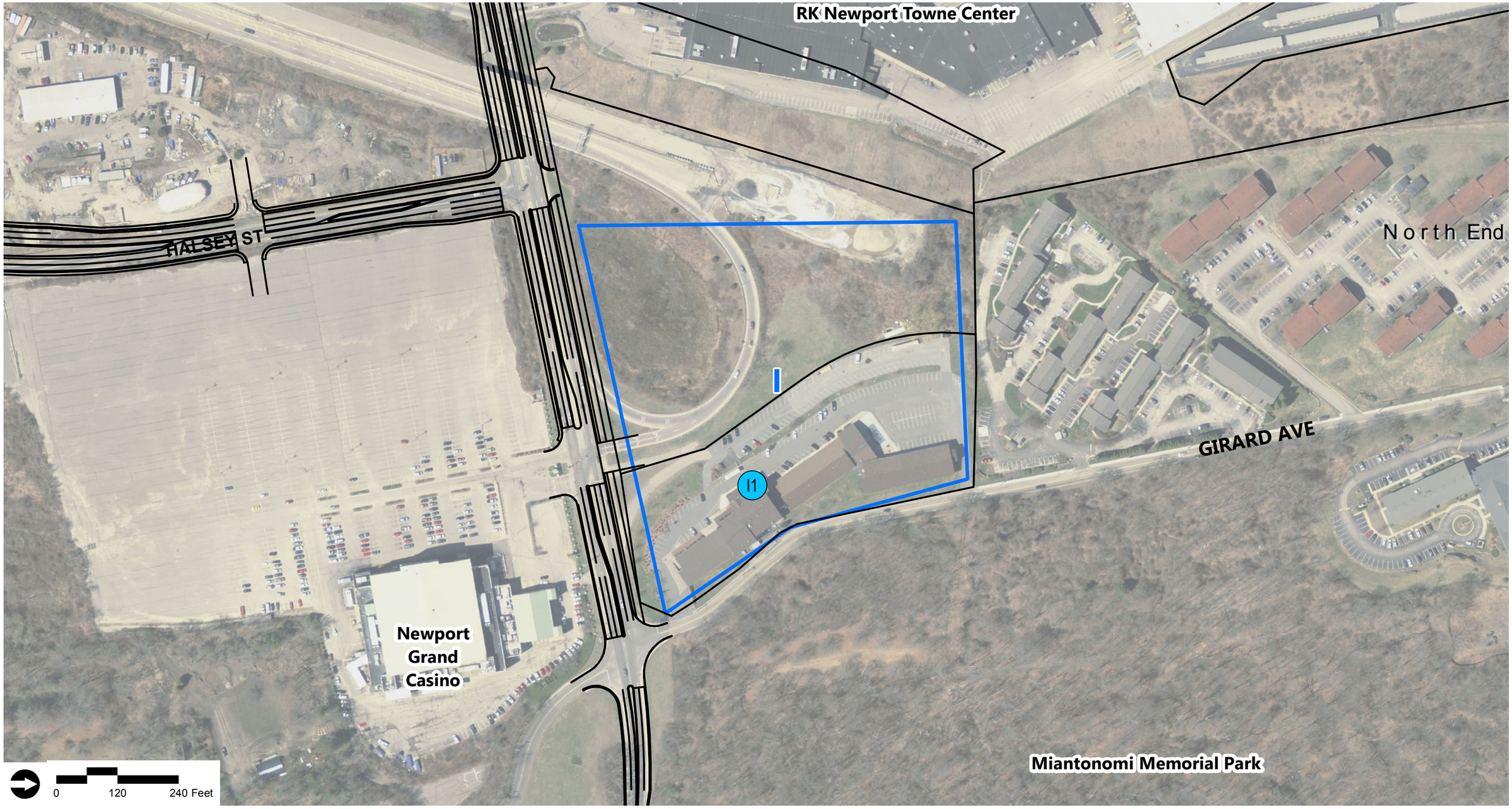
- No Impact
- Noise Impact
- No Interior Impact (Cat D)
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 6

CNE F, G, H - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island

\\vhb\gis\proj\Providence\72900.00\gis\Project\Noise\Figure X.X Noise Receptor Locations.mxd



Source: RIDOT, RIGIS

Legend

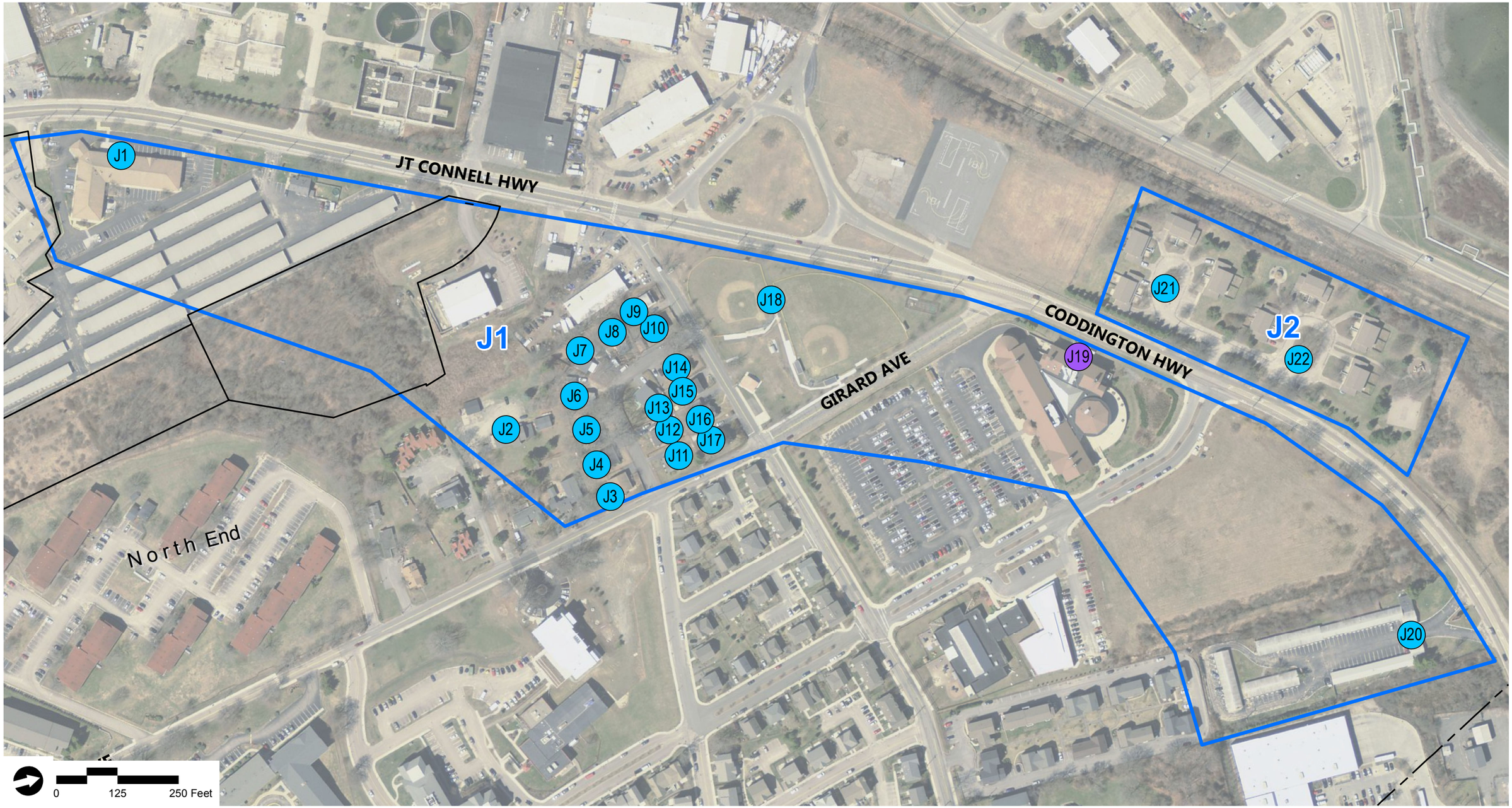
- No Impact
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 7

CNE I - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island

\\vhb\gis\proj\Providence\72900.00\gis\Project\Noise\Figure X.X Noise Receptor Locations.mxd



Source: RIDOT, RIGIS

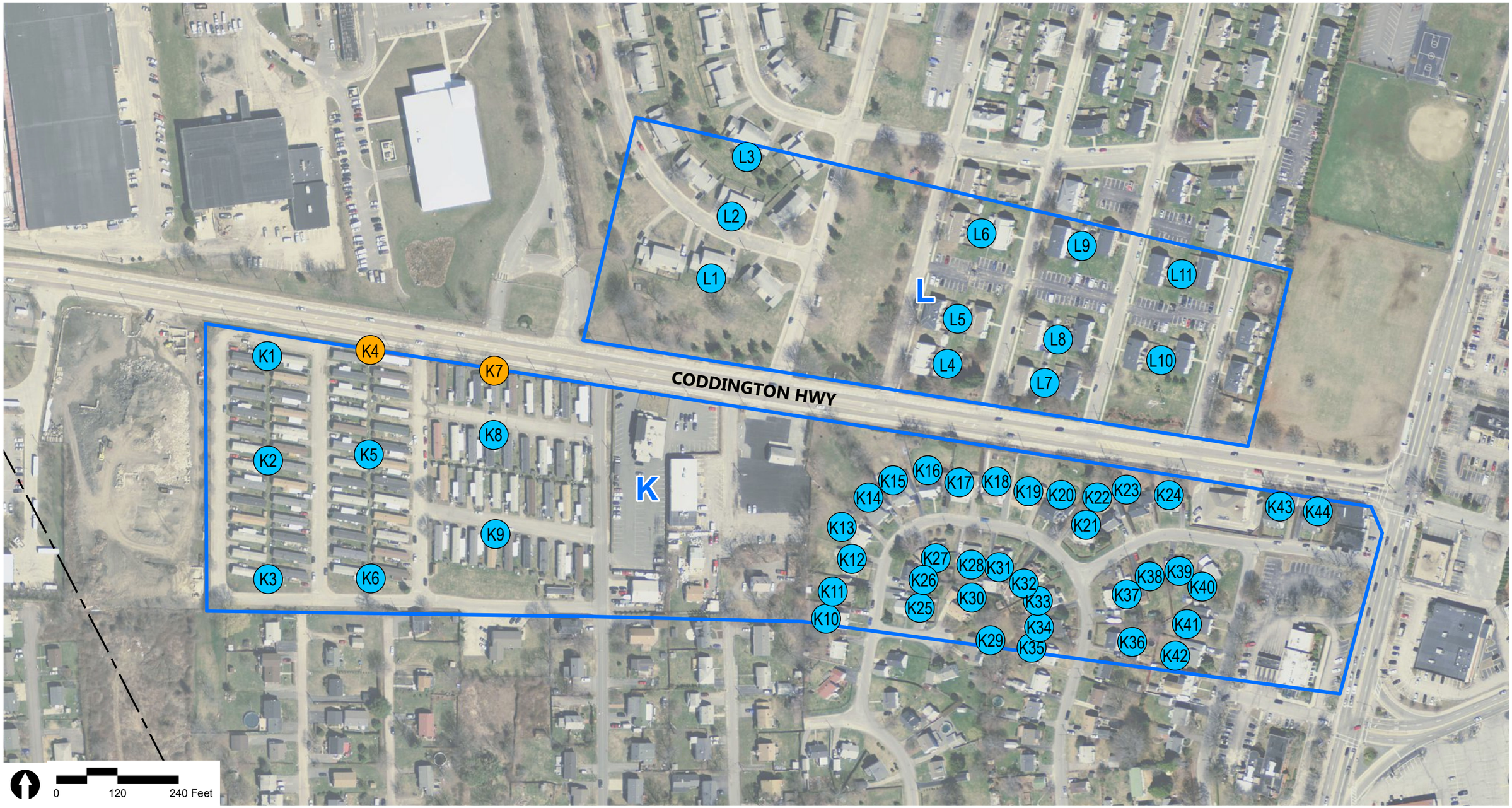
Legend

- No Impact
- No Interior Impact (Cat D)
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 8

CNE J - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island



Source: RIDOT, RIGIS

Legend

- No Impact
- Noise Impact
- Common Noise Environment
- Proposed Alignment
- Municipal Boundary

Figure 9

CNE K, L - Noise Receptor Locations

Reconstruction at Pell Bridge Ramps
Newport/Middletown, Rhode Island

6. Noise Abatement

6.1 Noise Abatement Evaluation Methodology

Noise abatement must be considered for areas where there are receptors which exceed the RIDOT Noise Abatement Criteria (NAC). Potential noise abatement measures include traffic management measures, traffic control devices, vehicle-type restrictions, nighttime-use restrictions, reducing speeds, designated lanes, alteration of the horizontal or vertical alignment, construction of noise barriers or berms, or noise insulation of public-use or non-profit institutional structures.

The feasibility and reasonableness of noise walls is evaluated according to RIDOT criteria in the Noise Policy. These criteria have been established to provide a consistent approach and procedure for providing noise abatement across the entire state. RIDOT's feasibility and reasonableness criteria address the following factors:

Engineering feasibility: The barrier must be able to be constructed given the topography, roadway geometry, potential conflicts with utilities, access requirements and maintenance needs. The barrier must maintain safety requirements regarding clear zones, redirection of crash vehicles, snow removal, adequate sight distances, and fire access. Typically, a minimum of 10 feet is provided between the roadway and the noise barrier for snow storage. A barrier should not require filling or altering wetlands. The barrier design should also consider potential environmental impacts historic properties, and park lands.

Viewpoints of Benefitted Receptors: FHWA requires that the views of impacted residents be considered when reaching a decision on the reasonableness of an abatement measure chosen to reduce roadway noise. Before the Department proceeds with the final design of a noise barrier, viewpoints will be solicited from all property owners and residents of the benefited receptors. At least 75% of all property owners and residents of benefited receptors must state their point of view on the proposed barrier. If less than 75% respond, the barrier will not be considered. RIDOT will provide letters notifying the public of the process and its requirements. Return forms will be self-addressed and stamped. Viewpoints shall be in the form of a written, signed response sent via U.S. Mail and postmarked within 30 days of the date of RIDOT's written request. At least 67% of the property owners and residents of benefited receptors must be in favor of the proposed noise barrier for it to be considered. For multiple-unit dwellings, property owner's viewpoints will be weighted by permitting them to submit one written viewpoint for each dwelling unit they own. For special land use sites, the property owner must be in favor of the barrier for it to be considered. This should be determined as early as possible, in order to avoid designing barriers that are not favored.

When the governing body of the affected community (Town Council, City Council, etc.) is opposed to noise abatement that is determined feasible and reasonable, RIDOT will coordinate with the town/city officials. The purpose for coordination is to determine if the local government's reasons for opposition are justified. RIDOT will

make every effort to work with the community to gain governing body support for noise abatement that is deemed feasible and reasonable.

Cost Effectiveness: Because RIDOT must balance its available funds and responsibilities, the CEI is used as the primary factor when considering the reasonableness of construction of a noise barrier. A noise barrier with a CEI of $30,000 or less per benefited receptor based on $30 per square foot is considered cost effective. The factors that affect the CEI are the noise barrier cost and number of benefitted receptors, both of which are affected by the noise barrier's height, length, and location. All receptors attaining at least 7 dBA of noise reduction are benefitted receptors.

The CEI is equal to $$/unit, where:

$$ = Total barrier cost, based upon a $30[4] per square foot cost.

unit = Number of benefited dwelling units in the study zone

The CEI is calculated by dividing the noise barrier cost by the number of dwellings in the study zone that receive a 7 dB(A) insertion loss or greater. The individual insertion losses come from modeling output files. The noise barrier cost is determined by multiplying the square footage of the noise barrier from TNM by $30 per square foot. It should be noted that both the CEI of $30,000 and the barrier costs of $30 per square foot were developed for the same year (2011).

Acoustic feasibility: For a barrier to be considered feasible, at least 80% of the impacted receptors must achieve a 5 dBA or greater highway traffic noise reduction. In addition, the barrier must also achieve the RIDOT noise reduction design goal of 10 dBA of reduction for 50% or more of all benefited receptors.

Date of Development: In a development where the majority (at least 51%) of receptors was in place prior to the initial construction of the roadway, benefited receptors will receive an additional consideration for noise abatement. The allowable CEI in these cases will be $37,500 per benefiting receptor.

[4] The noise barrier cost of $30 per square foot is based on regional historic construction bid data.

6.2 Noise Abatement Analysis

The following summarizes the noise abatement analysis for all locations where design-year noise levels approach or exceed the NAC or there would be a substantial increase in highway noise.

6.2.1 CNE B – Third Street (South of Van Zandt Avenue)

Design-year noise levels at CNE B would approach or exceed the NAC at one residential receptor (B37). The predominant sources of noise at this receptor is local traffic on Van Zandt Avenue since there are intervening buildings reducing noise from the Pell Bridge mainline. Since Van Zandt Avenue and other local roads are a significant factor in noise levels approaching or exceeding the NAC, for noise abatement to be acoustically effective it would need to reduce noise from Van Zandt Avenue as well as the Pell Bridge mainline. It is not feasible to alter the alignment of these local roadways or institute speed or truck restrictions to these local roads and noise barriers are not feasible due to pedestrian access needed for these residences. Therefore, noise abatement would not be feasible and reasonable for CNE B.

6.2.2 CNE D – Cypress Street

Design-year noise levels would approach or exceed the NAC at five residential receptors (D1, D3, D5, D6, and D7) in the Cypress Street neighborhood (CNE D), and noise abatement, such as noise barriers, must be considered. A noise wall constructed along the north side of the existing Pell Bridge approach would be most effective at reducing noise levels in this area. A noise barrier ranging in height from 9 to 25 feet was evaluated for feasibility and reasonability.

Table 7 summarizes the acoustical and cost effectiveness of a preliminary noise barrier design for CNE D. A 1,760-foot long barrier was evaluated for noise abatement at all receptors within CNE D. A 13-foot tall noise barrier constructed within the ROW could achieve up to 13 dBA of insertion loss, provide at least 5 dBA of insertion loss to 100% of impacted receptors, and provide at least 10 dBA of reduction to 89% of all benefitted receptors, but has a CEI of $76,267 which is significantly greater than the reasonableness criterion of $30,000 per benefitted receptor. Therefore, the noise barrier would not be feasible and reasonable and is not recommended for construction.

6.2.3 CNE E – JT Connell Highway/Van Zandt Avenue Neighborhood

Design-year noise levels would approach or exceed the NAC, or there would be a substantial increase in noise of 10 dBA at 13 residential receptors (E45 – E48, E52 – E59) within the CNE E area and noise abatement, such as noise barriers, must be considered. A noise wall constructed on the southeast of the proposed State Route 138 mainline would be most effective at reducing noise levels in this area. Noise barriers ranging from 9 to 25 feet were evaluated for feasibility and reasonability.

Table 8 summarizes the acoustical and cost effectiveness of a preliminary noise barrier design for CNE E. A 1,969-foot long barrier was evaluated for noise abatement at all receptors within CNE E. A 25-foot tall barrier would meet the feasibility criteria by providing at least 5 dBA of insertion loss to 100% of impacted receptors however, it could only provide 10 dBA of insertion loss to 49% of benefitted receptors, which is less than the RIDOT criteria of 50%. Additionally, a barrier of this height would have a CEI of $42,193, which is greater than the reasonableness criterion of $30,000 per benefit receptor. Therefore, noise abatement would not be feasible and reasonable for CNE E, and is not recommended for construction.

6.2.4 CNE K – Bayview Park/King Road

Design-year noise levels at CNE K would approach or exceed the NAC at two residential receptors (K4 and K7). The predominant sources of noise at these receptors is JT Connell Highway since they are sufficiently far from other major roadway sources such as State Route 138 and Admiral Kalbfus Highway. Since JT Connell Highway and other local roads are a significant factor in noise levels approaching or exceeding the NAC, for noise abatement to be acoustically effective it would need to reduce noise from JT Connell Highway. It is not feasible to alter the alignment of JT Connell Highway or institute speed or truck restrictions to these local roads and noise barriers are not feasible due to pedestrian and vehicular access needed for these residences. Therefore, noise abatement would not be feasible and reasonable for CNE K.

Table 7. Noise Abatement Analysis Summary – CNE D – Cypress Street

Description	Constant Height Noise Barrier								
	9 feet	11 feet	13 feet	15 feet	17 feet	19 feet	21 feet	23 feet	25 feet
Category B/C Impacts (Dwelling Units)	5	5	5	5	5	5	5	5	5
Benefited Receptors (Dwelling Units)	8	9	9	9	9	9	9	9	9
Insertion Loss – All Benefits (dBA, Average/Max)	8.5/10.2	9.8/12	11/13.2	11.8/14.2	12.4/14.9	12.8/15.5	13.2/16.1	13.6/16.6	14/17.1
Barrier Length (ft)	1,760	1,760	1,760	1,760	1,760	1,760	1,760	1,760	1,760
Barrier Area (SF)	15,840	19,360	22,880	26,400	29,920	33,440	36,960	40,480	44,000
Barrier Cost ($30/SF)	$475,200	$580,800	$686,400	$792,000	$897,600	$1,003,200	$1,108,800	$1,214,400	$1,320,000
Cost Effectiveness Index	$59,400	$64,533	$76,267	$88,000	$99,733	$111,467	$123,200	$134,933	$146,667
Impacted Receptors – 5 dBA Reduction	100%	100%	100%	100%	100%	100%	100%	100%	100%
Benefited Receptors – 10 dBA Reduction	13%	56%	89%	89%	89%	89%	89%	89%	100%
Feasible and Reasonable	No	No	No	No	No	No	No	No	No

Source: VHB, 2018.

Table 8. Noise Abatement Analysis Summary – CNE E – JT Connell Highway/Van Zandt Avenue Neighborhood

Description	Constant Height Noise Barrier								
	9 feet	11 feet	13 feet	15 feet	17 feet	19 feet	21 feet	23 feet	25 feet
Category B/C Impacts (Dwelling Units)	12	12	12	12	12	12	12	12	12
Benefited Receptors (Dwelling Units)	8	14	19	27	32	33	34	35	35
Insertion Loss – All Benefits (dBA, Average/Max)	6.5/11.1	7.1/12.2	7.6/13.2	8.2/14	8.5/14.8	8.9/15.5	9.1/16.2	9.4/16.8	9.7/17.3
Barrier Length (ft)	1,969	1,969	1,969	1,969	1,969	1,969	1,969	1,969	1,969
Barrier Area (SF)	17,721	21,659	25,597	29,535	33,473	37,411	41,349	45,287	49,225
Barrier Cost ($30/SF)	$531,630	$649,770	$767,910	$886,050	$1,004,190	$1,122,330	$1,240,470	$1,358,610	$1,476,750
Cost Effectiveness Index	$66,454	$46,412	$40,416	$32,817	$31,381	$34,010	$36,484	$38,817	$42,193
Impacted Receptors – 5 dBA Reduction	79%	100%	100%	100%	100%	100%	100%	100%	100%
Benefited Receptors – 10 dBA Reduction	13%	21%	26%	22%	28%	27%	38%	46%	49%
Feasible and Reasonable	No	No	No	No	No	No	No	No	No

Source: VHB, 2018.

7. Construction Noise

There are no statewide noise regulations that relate to construction activities in Rhode Island. The City of Newport Noise Ordinance (Chapter 8.12)[5] is intended to protect, preserve and promote the health, safety, welfare, peace and quiet of the citizens of Newport through the reduction, control and prevention of noise.

The Newport Noise Ordinance prohibits the operation of any construction equipment or conduct any construction activities between the hours of 10:00 p.m. and 7:00 a.m. for residential units that exceed noise levels in Table 9.

Table 9. Newport Noise Ordinance Noise Limits

Zoning District	Time	Sound Limit
Residential	7:00 a.m. to 9:59 p.m.	65 dBA
	10:00 p.m. to 6:59 a.m.	55 dBA
Limited Business	1:00 a.m. to 7:00 a.m.	55 dBA
	All other times	75 dBA
General Business	1:00 a.m. to 7:00 a.m.	55 dBA
	All other times	75 dBA
Waterfront Business	1:00 a.m. to 7:00 a.m.	55 dBA
	All other times	75 dBA
Commercial/Industrial	1:00 a.m. to 7:00 a.m.	55 dBA
	All other times	75 dBA
Public Water	1:00 a.m. to 7:00 a.m.	55 dBA
	All other times	65 dBA
Noise Sensitive Area	7:00 a.m. to 9:59 p.m.	65 dBA
	10:00 p.m. to 6:59 a.m	55 dBA

Source: City of Newport.

The ground clearing and earthwork phases of construction are typically the loudest. Table 10 presents the maximum noise levels of typical construction equipment used during highway improvement projects.

[5] *Chapter 8.12 Noise Abatement*, Newport, Rhode Island – Code of Ordinances. Section 140: Construction. https://library.municode.com/ri/newport/codes/code_of_ordinances?nodeId=COOR_TIT8HESA_CH8.12NOAB_8.12.140CO . Accessed October 2018.

Table 10. Noise Levels of Typical Highway Construction Equipment

Equipment	Maximum Noise Level at 50 feet (dBA)
Backhoe	80
Blasting	94
Compactor	80
Air Compressor	80
Dozer	85
Dump Truck	84
Excavator	85
Hoe Ram	90
Paver	85
Rock Drill	85
Scraper	85

Source: Federal Highway Administration, Roadway Construction Noise Model, 2006.

Construction practices should be used to minimize construction noise as feasible and reasonable including the following:

- Assuring that equipment is functioning properly and is equipped with mufflers and other noise-reducing features.
- Locating especially noisy equipment as far from sensitive receptors as possible
- Using quieter construction equipment and methods, as feasible.
- Using path noise control measures such as temporary noise barriers, portable enclosures for small equipment (i.e. jackhammers and concrete saws)
- Replacing back up alarms with strobes, as allowed within OSHA regulations, to eliminate the annoying impulsive sound.
- Maintaining strong communication and public outreach with adjacent neighbors is a critical step in minimizing impact.

8. Information for Local Government Officials

The following information is provided for local government officials in consideration of noise-compatible planning and highway noise abatement responsibility.

8.1 Noise-Compatible Land Use Planning

The prevention of future impacts is one of the most important aspects of noise control. Local development and highways can co-exist, but local government officials need to know what noise levels to expect from a highway and what type of development will be compatible with it.

One of the most effective means to prevent future traffic noise impacts is to promote noise-compatible land use planning for new developments. The compatibility of highways and neighboring local areas is essential for continued growth and can be achieved if local governments and developers require and practice noise-sensitive land-use planning.

Although regulation of land use is not within the purview of RIDOT, some widely accepted techniques for noise-sensitive land use planning in the vicinity of existing and proposed highway facilities include:

- Locating commercial retail, industrial, manufacturing, warehousing and other noise-compatible land-uses adjacent to highways
- Incorporating effective traffic noise mitigating features, such as earth berms and solid-mass noise walls, as part of residential developments
- Utilization of noise-sensitive architectural design and site planning, such as the orientation of quiet spaces away from roadways
- Required use of sound insulating building materials and construction methods

8.2 Noise Abatement Responsibility

The FHWA and the Department are responsible for all noise abatement considerations up until the "Date of Public Knowledge" of the project for all existing or permitted development. After this date, the Department is still responsible for analyzing changes in traffic noise impacts, when appropriate, but the Department is no longer responsible for providing noise abatement for new development which occurs adjacent to the proposed highway project. Provision of such noise abatement becomes the responsibility of local communities and private developers.

Appendix

Table 11. Existing and Design-Year Noise Level Summary

CNE	Activity Category	Location	Category B Dwelling Units	Category C/D Locations	Category E Units	Noise Levels (Leq, dBA)			Noise Abatement
						Existing	No Action	Design-Year Build	
A	B	America's Cup Avenue/ Farewell Street	7	0	0	56-61	56-61	55-59	Not warranted
B	B	Third Street (South of Van Zandt Avenue)	38	0	0	48-66	48-66	**49-67**	Not feasible/reasonable
C	B/C	Sycamore Street	43	2	0	53-63	53-63	55-66	Not warranted
D	B	Cypress Street	9	0	0	60-65	60-65	**63-68**	Not feasible/reasonable
E	B	JT Connell Highway/Van Zandt Avenue	59	0	0	46-63	46-63	**55-70**	Not feasible/reasonable
F	B/C	Third Street (North of Van Zandt Avenue)	131	1	0	51-60	51-60	55-63	Not warranted
G	D	Newport Naval Health Clinic	0	1	0	50 (15 interior) [A]	50 (15 interior) [A]	53 (18 interior) [A]	Not warranted
H	B	Rolling Green Apartments	80	0	0	60	60	60	Not warranted
I	E	Mainstay Hotel	0	0	180	55	55	55	Not warranted
J	B/C/D/E	Newport Community College/Reliance Row	24	2	123	46-63 (28 interior) [A]	46-63 (28 interior) [A]	47-65 (33 interior) [A]	Not warranted
K	B	Bayview Park/King Road	37	0	0	45-67	45-67	**47-68**	Not feasible/reasonable
L	B	JT Connell Highway (north extent)	50	0	0	47-59	47-59	49-61	Not warranted
M	C	Braman Cemetery and Island Cemetery	0	1	0	51-64	51-64	53-65	Not warranted

A Interior sound level in parenthesis assuming 35 dBA outdoor-to-indoor noise reduction for masonry building with double-pane windows.

Source: VHB, 2018.

Table 12. CNE A – America's Cup Avenue/ Farewell Street Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
A1	13 BRAMAN ST	B	1	58.3	58.3	55.8
A2	9 MADISON CT	B	1	61.3	61.3	58.7
A3	9 BRAMAN ST	B	1	56.7	56.7	54.5
A4	5 BRAMAN ST	B	1	56.9	56.9	54.7
A5	66 FAREWELL ST	B	1	57.9	58	55.7
A6	1.5 WILLOW ST	B	1	57.2	57.2	54.8
A7	60 FAREWELL ST	B	1	60	60.1	57.5

Source: VHB, 2018.

Table 13. CNE B – Third Street (South of Van Zandt Avenue) Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)[1]	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)[1]
B1	1 WILLOW ST	B	1	57.3	57.4	54.7
B2	3 WILLOW ST	B	1	53.3	53.3	51
B3	3 BRAMAN ST	B	1	54.4	54.5	52.2
B4	16 WALNUT ST	B	1	51.1	51.2	49.5
B5	15 WALNUT ST	B	1	49	49.2	48.5
B6	5 KATZMAN PL	B	1	48.8	49	48.7
B7	8 KATZMAN PL	B	1	49.2	49.4	49.5
B8	2 CHERRY ST	B	1	49.1	49.3	49.7
B9	1 CHERRY ST	B	1	49.1	49.4	49.7
B10	1 GUERNEY CT	B	1	49.2	49.5	50.1
B11	5 GUERNEY CT	B	1	49.3	49.6	50.2
B12	7 GUERNEY CT	B	1	49.2	49.5	50.2
B13	9 GUERNEY CT	B	1	49.6	49.9	50.7
B14	1 SUNSHINE CT	B	1	50.2	50.5	51.2
B15	3 SUNSHINE CT	B	1	50.4	50.7	51.3
B16	3 GLADDING CT	B	1	50.9	51.2	51.7
B17	5 GLADDING CT & 5-1/2	B	1	51.1	51.4	51.9
B18	7 GLADDING CT	B	1	51.3	51.6	52.1
B19	7 LA SALLE PL	B	1	51.3	51.6	52.1
B20	9 LA SALLE PL	B	1	51.4	51.7	52.2
B21	11 LA SALLE PL	B	1	51.6	51.9	52.4
B22	8 LA SALLE PL	B	1	52.2	52.5	52.7
B23	10 LA SALLE PL	B	1	52.3	52.6	52.8
B24	12 LA SALLE PL	B	1	52.3	52.6	52.8

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)[1]	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)[1]
B25	6 MAITLAND CT	B	1	52.3	52.6	52.7
B26	2 MAITLAND CT	B	1	52.7	53	53.2
B27	89 THIRD ST	B	1	58.6	58.8	57.9
B28	15 MAITLAND CT	B	1	57	57.3	56.7
B29	13 MAITLAND CT	B	1	55.9	56.1	55.8
B30	11 MAITLAND CT	B	1	55.5	55.7	55.6
B31	9 MAITLAND CT	B	1	55.3	55.5	55.3
B32	7 MAITLAND CT	B	1	55.1	55.3	55.1
B33	5 MAITLAND CT	B	1	55.5	55.7	55.3
B34	3 MAITLAND CT	B	1	54.7	55	54.7
B35	1 MAITLAND CT	B	1	54.4	54.7	54.1
B36	91 THIRD ST	B	1	59.8	60	59.5
B37	93 THIRD ST	B	1	66.8	67	66.8
B38	33 VAN ZANDT AVE	B	1	60.8	61	60.7

Source: VHB, 2018.

Table 14. CNE C – Sycamore Street Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
C1	4 VAN ZANDT AVE	B	1	57.3	57.6	57.4
C2	123 WASHINGTON ST	B	1	56.2	56.5	57.8
C3	125 WASHINGTON ST	B	1	59.4	59.6	60.7
C4	129 WASHINGTON ST	B	1	63	63.3	64.8
C5	10 VAN ZANDT AVE	B	1	59.3	59.5	58.1
C6	11 BAYSIDE AVE	B	1	55.2	55.4	56.3
C7	13 BAYSIDE AVE	B	1	54.4	54.6	56.7
C8	15 BAYSIDE AVE	B	1	55.9	56.2	58.1
C9	17 BAYSIDE AVE	B	1	57.8	58.1	59.5
C10	19 BAYSIDE AVE	B	1	60.5	60.8	62.8
C11	104 SECOND ST	B	1	60.2	60.4	58.4
C12	106 SECOND ST	B	1	54.4	54.6	55.8
C13	108 2ND ST	B	2	54.7	54.9	57
C14	112 SECOND ST	B	1	58.1	58.4	60.1
C15	114 SECOND ST	B	1	60.7	61	63.2
C16	103 SECOND ST	B	1	60.2	60.4	60.6
C17	105 SECOND ST	B	1	56.3	56.5	57.1
C18	107 SECOND ST	B	1	55.6	55.8	56.8
C19	109.5 SECOND ST	B	1	55.4	55.7	56.8
C20	109 SECOND ST	B	1	55.6	55.9	57.4

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
C21	111 SECOND ST	B	1	56.1	56.4	58.1
C22	113 SECOND ST	B	1	57.2	57.5	59.4
C23	7 SYCAMORE ST	B	1	63.7	64	65.7
C24	5 SYCAMORE ST	B	1	62.9	63.2	64.4
C25	3 SYCAMORE ST	B	1	62.6	62.8	64
C26	1 SYCAMORE ST	B	1	63.1	63.4	65
C27	24 VAN ZANDT AVE	B	1	61	61.2	61.1
C28	22 VAN ZANDT AVE	B	1	59.4	59.6	59.8
C29	96 THIRD ST	B	1	57.9	58.1	58
C30	98 THIRD ST	B	1	56.1	56.3	57.2
C31	100 THIRD ST	B	1	56.3	56.6	57.4
C32	102 THIRD ST	B	1	56.4	56.7	57.7
C33	2 SYCAMORE ST	B	1	57.1	57.4	58.6
C34	95 THIRD ST	B	1	63.1	63.3	63
C35	97 THIRD ST	B	1	59.1	59.3	59.5
C36	99 THIRD ST	B	1	57.7	57.9	58.5
C37	103 THIRD ST	B	1	57.2	57.4	58.5
C38	105 THIRD ST	B	1	57.4	57.6	58.8
C39	0 SYCAMORE ST	B	1	57.1	57.4	58.8
C40	109 THIRD ST	B	1	58.3	58.6	59.9
C41	3 DYRES GATE	B	1	59.4	59.6	60
C42	0 DYRES GATE	B	1	57.5	57.8	58.4
C43	10 DYRES GATE	B	1	59.1	59.4	60.3
C44	Hunter Park (Tennis)	C	1	56.4	56.7	58.1
C45	Hunter Park (Playground)	C	1	56.9	57.2	59
C46	JT CONNELL HWY – Dog Park	C	1	59.6	59.8	61
C47	Van Zandt Pier	C	1	53.3	53.6	55.1

Source: VHB, 2018.

Table 15. CNE D – Cypress Street Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
D1	0 WASHINGTON ST	B	1	65.9	66.1	68.3
D2	1 CYPRESS ST	B	1	60.1	60.4	62.8
D3	32 BAYSIDE AVE	B	1	64.5	64.7	67
D4	34 BAYSIDE AVE	B	1	62.5	62.7	65
D5	31 BAYSIDE AVE	B	1	64.4	64.7	67.3
D6	3 CYPRESS ST	B	1	63.7	64	66.2

D7	126 SECOND ST	B	1	63.8	64	66.8
D8	128 SECOND ST	B	1	62.5	62.8	65.3
D9	125 SECOND ST	B	1	63.3	63.6	64.3

Source: VHB, 2018.

Table 16. CNE E – JT Connell Highway/Van Zandt Avenue Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
E1	62 VAN ZANDT AVE	B	1	63.5	63.7	64.3
E2	0 SOUTHMAYD ST	B	1	57.7	57.9	60.5
E3	2 EVARTS ST	B	1	56.6	56.9	60.3
E4	4 EVARTS ST	B	1	54.4	54.6	58.8
E5	8 EVARTS ST & BUTLER ST 10	B	1	53.4	53.6	57.5
E6	18 BUTLER ST	B	1	53.7	53.9	58.3
E7	20 BUTLER ST	B	1	53.5	53.8	59.1
E8	1 SOUTHMAYD ST	B	1	56.1	56.3	61.1
E9	3 SOUTHMAYD ST	B	1	54.9	55.2	60.1
E10	22 BUTLER ST	B	1	54.4	54.7	60
E11	24 BUTLER ST	B	1	55.5	55.8	61.1
E12	24 EVARTS ST	B	1	50.6	50.9	54.6
E13	13 BUTLER ST	B	1	50.3	50.6	54.7
E14	30 EVARTS ST	B	1	50.4	50.6	54.8
E15	0 EVARTS ST	B	1	50.1	50.4	54.7
E16	15 BUTLER ST	B	1	50.1	50.4	54.7
E17	18 PRESCOTT HALL RD	B	1	50	50.3	54.9
E18	16 PRESCOTT HALL RD	B	1	50.1	50.4	54.9
E19	17 BUTLER ST	B	1	49.8	50.1	55
E20	19 BUTLER ST	B	1	49.6	49.8	54.9
E21	22 PRESCOTT HALL RD	B	1	50.2	50.5	55.8
E22	21 BUTLER ST	B	1	52.4	52.7	59.5
E23	11 SOUTHMAYD ST	B	1	49.5	49.8	55.2
E24	24 PRESCOTT HALL RD	B	1	51.7	51.9	58.1
E25	23 BUTLER ST	B	1	54.4	54.7	60.8
E26	25 BUTLER ST	B	1	55	55.2	61.9
E27	28 PRESCOTT HALL RD	B	1	53.2	53.5	59.7
E28	26 PRESCOTT HALL RD	B	1	52.5	52.7	59.2
E29	30 PRESCOTT HALL RD	B	1	53.4	53.6	60.1
E30	30.5 PRESCOTT HALL RD	B	1	54.5	54.8	61.3
E31	32 PRESCOTT HALL RD	B	1	55.5	55.7	63.4
E32	34 PRESCOTT HALL RD	B	1	56.9	57.2	65.2

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
E33	29 PRESCOTT HALL RD	B	1	49.8	50.1	55.7
E34	22 SOUTHMAYD ST	B	1	50.4	50.7	56.5
E35	24 SOUTHMAYD ST	B	1	50	50.2	57
E36	26 SOUTHMAYD ST	B	1	49.5	49.8	56.7
E37	31 PRESCOTT HALL RD	B	1	50.4	50.7	57.2
E38	30 HALSEY ST	B	1	49.8	50.1	57.1
E39	33 PRESCOTT HALL RD	B	1	50.9	51.2	58.1
E40	32 HALSEY ST	B	1	50	50.3	57.6
E41	35 PRESCOTT HALL RD	B	1	51	51.3	58.9
E42	37 PRESCOTT HALL RD	B	1	51.6	51.9	60.3
E43	78 GARFIELD ST	B	1	50.6	50.9	58.5
E44	76 GARFIELD ST	B	1	50.2	50.5	58.5
E45	81 GARFIELD ST	B	1	59.4	59.7	70.1
E46	79 GARFIELD ST	B	1	57	57.3	68.7
E47	0 ADMIRAL KALBFUS RD REAR	B	1	54.7	55	66.1
E48	75 GARFIELD ST	B	1	52.6	52.9	64.3
E49	50 HALSEY ST	B	1	54.9	55.2	68.8
E50	56 HALSEY ST (AQUISITION)	B	1	54.6	54.9	N/A
E51	58 HALSEY ST (AQUISITION)	B	1	54.1	54.3	N/A
E52	49 HALSEY ST	B	1	46.9	47.2	59.4
E53	69 GARFIELD ST	B	1	47.2	47.4	58.7
E54	67 GARFIELD ST	B	1	46.8	47.1	57.4
E55	0 HOMER ST	B	1	47.3	47.6	57.2
E56	51 HALSEY ST	B	1	47.6	47.9	60.1
E57	53 HALSEY ST	B	1	47.4	47.6	60.7
E58	57 HALSEY ST	B	1	48.3	48.6	64.2
E59	54 HOMER ST	B	1	47.7	47.9	60.9

Source: VHB, 2018.

N/A: Properties would be acquired in Build Alternative

Table 17. CNE F – Third Street (North of Van Zandt Avenue) Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
F1	143 THIRD ST - Playground	C	1	60.5	60.7	62.7
F2	143 THIRD ST - 2	B	35	57.6	57.8	60.3

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
F3	147 THIRD ST	B	1	55.3	55.5	58.1
F4	151 THIRD ST	B	1	54	54.2	57
F5	143 THIRD ST - 1	B	35	53.5	53.7	56.7
F6	143 THIRD ST - 3	B	41	54.3	54.5	57.7
F7	155 THIRD ST	B	1	53.2	53.4	56.3
F8	159 THIRD ST	B	1	52.9	53.1	56
F9	163 THIRD ST	B	1	52.5	52.7	55.6
F10	167 THIRD ST	B	1	52.3	52.5	55.5
F11	171 THIRD ST	B	1	51.9	52.2	55.4
F12	175 THIRD ST	B	1	51.8	52	55.6
F13	179 THIRD ST	B	1	51.5	51.7	55.7
F14	183 THIRD ST	B	1	51.9	52.1	58.5
F15	185 THIRD ST	B	1	52.9	53.1	58.8
F16	187 THIRD ST	B	1	52.2	52.4	56.3
F17	189 THIRD ST	B	1	52	52.3	55.7
F18	191 THIRD ST	B	1	52.1	52.4	55.5
F19	193 THIRD ST	B	1	52.8	53	55.9
F20	201 THIRD ST	B	1	52.9	53.1	55.6
F21	203 THIRD ST	B	1	52.1	52.3	54.7
F22	205 THIRD ST	B	1	52.1	52.3	54.6
F23	209 THIRD ST	B	1	52.5	52.7	54.9
F24	211 THIRD ST	B	1	53.4	53.6	55.8

Source: VHB, 2018.

Table 18. CNE G – Newport Naval Health Clinic Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)[1]	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
G1	Newport Naval Health Clinic	D	1	50.2 (15.2)	50.4 (15.4)	52.8 (17.8)

1 Noise levels in parentheses represent interior levels assuming a 35-dBA outdoor-to-indoor sound attenuation for masonry buildings with double-pane windows.

Source: VHB, 2018.

Table 19. CNE H – Rolling Green Apartments Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
H1	195 ADMIRAL KALBFUS RD - 1	B	40	60.4	60.7	60
H2	195 ADMIRAL KALBFUS RD - 2	B	40	60.4	60.7	60.4

Source: VHB, 2018.

Table 20. CNE I – Mainstay Hotel Noise Level Summary

Receptor	Address	Activity Category[1]	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
I1	Mainstay Hotel	E	180	55.1	55.4	55.4

Source: VHB, 2018.

Table 21. CNE J – Newport Community College/Reliance Row Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)[1]	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
J1	222 J T CONNELL MEMORIAL RD	E	76	60.7	61	62.4
J2	116 GIRARD AVE	B	1	58.2	58.4	60.3
J3	2 LEAL TER	B	1	46.9	47.1	49.7
J4	4 LEAL TER	B	1	45.5	45.7	47.3
J5	6 LEAL TER	B	1	46.3	46.5	48.2
J6	8 LEAL TER	B	1	47.3	47.5	49.3
J7	10 LEAL TER	B	1	48.5	48.7	50.5
J8	12 LEAL TER	B	1	50.5	50.7	52.7
J9	254 MAPLE AVE	B	1	51.9	52.1	54.3
J10	252 MAPLE AVE	B	1	53.5	53.7	56.1
J11	1 LEAL TER	B	1	53.1	53.3	55.5
J12	3 LEAL TER	B	1	47	47.2	48.6
J13	7 LEAL TER	B	1	47.8	48	49.5
J14	15 LEAL TER	B	1	48.6	48.8	50.2
J15	244 MAPLE AVE	B	1	50.1	50.3	51.8
J16	242 MAPLE AVE	B	1	49.4	49.7	51.1
J17	240 MAPLE AVE	B	1	48.4	48.6	50
J18	245 MAPLE AVE	C	0	58.2	58.4	60.3

J19	0 JOHN H CHAFFEE BLVD	D	0	63.7	64	65.3
J20	372 CODDINGTON HWY	E	47	55.7	55.9	58.3
J21	0 CODDINGTON HWY - 2	B	4	57.3	57.5	59
J22	0 CODDINGTON HWY - 1	B	4	58.6	58.9	60

2 Noise levels in parentheses represent interior levels assuming a 35-dBA outdoor-to-indoor sound attenuation for masonry buildings with double-pane windows.

Source: VHB, 2018.

Table 22. CNE K – Bayview Park/King Road Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
K1	Bayview Park - 1	B	9	61.1	61.3	63
K2	Bayview Park - 2	B	9	50.6	50.8	52.7
K3	Bayview Park - 3	B	9	46.4	46.6	47.6
K4	Bayview Park - 4	B	9	67.3	67.5	67.9
K5	Bayview Park - 5	B	9	52.1	52.3	54.5
K6	Bayview Park - 6	B	9	46.6	46.8	48.2
K7	Bayview Park - 7	B	9	66.8	67.1	67.5
K8	Bayview Park - 8	B	18	55.3	55.5	58.6
K9	Bayview Park - 9	B	9	48.8	49	50.7
K10	37 KING RD	B	1	46.8	47	47.8
K11	35 KING RD	B	1	47.8	48	49.1
K12	33 KING RD	B	1	49.6	49.8	51.1
K13	31 KING RD	B	1	51.8	52	53.5
K14	29 KING RD	B	1	54.8	55	57
K15	27 KING RD	B	1	57.1	57.4	59.1
K16	25 KING RD	B	1	59.4	59.7	61.3
K17	23 KING RD	B	1	58.2	58.4	60.6
K18	21 KING RD	B	1	59.2	59.5	61.5
K19	19 KING RD	B	1	58.3	58.5	60.3
K20	17 KING RD	B	1	59.8	60	61.9
K21	15 KING RD	B	1	55.1	55.3	57.8
K22	17 HART ST	B	1	59.2	59.4	61.5
K23	15 HART ST	B	1	61.5	61.7	63.4
K24	13 HART ST	B	1	61.7	62	63.9
K25	9 ADMIRAL CT	B	1	46.5	46.7	47.6
K26	26 KING RD	B	1	47.6	47.8	48.8
K27	24 KING RD	B	1	48.6	48.8	50.1
K28	22 KING RD	B	1	48.2	48.4	49.6
K29	5 ADMIRAL CT	B	1	46.1	46.3	46.9
K30	7 ADMIRAL CT	B	1	47.8	48	48.9
K31	20 KING RD	B	1	48.5	48.7	50.1
K32	18 KING RD	B	1	48	48.2	49.6

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
K33	16 KING RD	B	1	46.9	47.1	48.2
K34	14 KING RD	B	1	46.5	46.7	48
K35	12 KING RD	B	1	45.9	46.1	47.2
K36	11 KING RD	B	1	46.4	46.6	48
K37	13 KING RD	B	1	48.3	48.5	50.1
K38	14 HART ST	B	2	49.7	49.9	51.5
K39	12 HART ST	B	1	50.7	50.9	53
K40	10 HART ST	B	1	50.5	50.8	52.7
K41	12 YARNELL AVE	B	1	48.1	48.3	49.7
K42	10 YARNELL AVE	B	1	46.6	46.8	48
K43	7 HART ST	B	1	62.8	63	64.6
K44	5 HART ST	B	2	63	63.2	64.7

Source: VHB, 2018.

Table 23. CNE L – JT Connell (north extent) Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
L1	JONES ST Front	B	6	53.5	53.7	55.9
L2	JONES ST Mid	B	6	49.5	49.7	51.3
L3	JONES ST Back	B	6	47.1	47.4	48.5
L4	LEXINGTON ST Front	B	4	59.1	59.3	61
L5	LEXINGTON ST Mid	B	4	53.5	53.8	55.5
L6	LEXINGTON ST Back	B	4	48.3	48.5	49.8
L7	NIAGARA ST Front	B	4	59.5	59.7	61.2
L8	NIAGARA ST Mid	B	4	53.8	54	55.8
L9	NIAGARA ST Back	B	4	47.9	48.1	49.5
L10	LAWRENCE ST Mid	B	4	54.2	54.4	56.7
L11	LAWRENCE ST Back	B	4	48.2	48.4	49.7

Source: VHB, 2018.

Table 24. CNE M – Braman Cemetery and Island Cemetery Noise Level Summary

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
M1	Braman Front	C	N/A	60.8	61.2	61.4
M2	Braman Mid	C	N/A	56	56.4	56.7

Receptor	Address	Activity Category	Dwelling Units	Existing Noise Level (Leq, dBA)	No Action Noise Level (Leq, dBA)	Design-Year Noise Level (Leq, dBA)
M3	Braman Back	C	N/A	52.3	52.7	53.3
M4	Common Burying Ground/Island Cemetery	C	N/A	51.6	51.9	53.6
M5	CBGIC Front	C	N/A	64.2	64.5	64.5
M6	CBGIC Mid Front	C	N/A	58.5	58.8	58.8
M7	CBGIC Mid Back	C	N/A	54.2	54.6	55.2
M8	CBGIC Back	C	N/A	51.7	52	53

Source: VHB, 2018.