Routes 7/15 Interchange
Norwalk, Connecticut
State Project No. 102-358

Environmental Assessment,
Draft Section 4(F) Evaluation and
Environmental Impact Evaluation

Appendix E
Noise Study

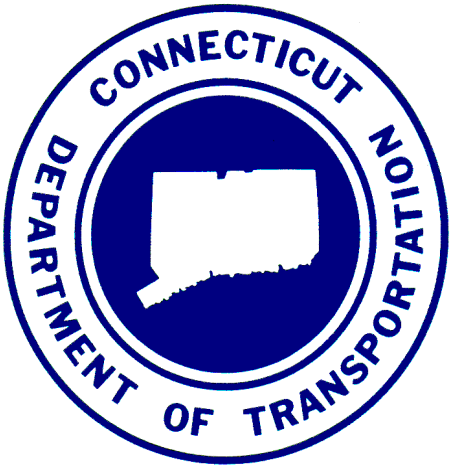
February 2022

Prepared for:
Connecticut Department of Transportation
Federal Highway Administration

Noise Study Report

Route 7/15 Interchange
Norwalk, Connecticut
State Project No. 102-358

Prepared by the
KB Environmental Sciences, Inc.
for the Connecticut Department of Transportation



June 1, 2020

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EXECUTIVE SUMMARY

The Connecticut Department of Transportation (CTDOT) is evaluating alternative improvements to the Route 7 and Merritt Parkway (Route 15) interchange in Norwalk. Because the project meets the CTDOT's definition of a Type I project, pursuant to Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) [1], a traffic noise study has been prepared. This Noise Study Report (NSR) documents the methodologies that were used to perform the highway traffic noise analysis and the results of the study.

The purpose of the project is to improve roadway system linkage between Route 7/15 Interchange No. 39; improve the mobility for vehicles at the Route 15 interchanges with Route 7 and Main Avenue (No. 39 & No. 40); improve the mobility for all users (motorists, pedestrians, and cyclists) along the immediate adjacent local roadway network (Main Avenue, Glover Avenue, and Creeping Hemlock Drive); and to improve safety in the vicinity of these interchanges.

Nineteen receptors (i.e., computer modeled locations), representing land uses within the project study area for which there are highway traffic Noise Abatement Criteria (NAC), were evaluated. Traffic noise levels were predicted for existing (year 2016) and future (design)-year 2045) conditions without the proposed improvements (i.e., the No Build Alternative). Traffic noise was also predicted for design year (year 2045) conditions for two build alternatives—Alternative 21D and Alternative 26. The year 2045 corresponds to the design year for traffic analysis purposes. The results of the analysis indicate that predicted design year traffic noise in the projects design year with either of the build alternatives would exceed the NAC at one receptor (Receptor 7)—a multi-family complex (One Glover Apartments) located in the northeast quadrant of the Route 7/15 interchange.

Traffic management, alteration of horizontal and vertical alignments, establishment of buffer zones, and noise barriers were considered as potential abatement measures. None of the measures were considered to be both a feasible and reasonable method of reducing/eliminating the predicted traffic noise impact at the multi-family complex.

The results of the highway traffic noise analysis presented in this Noise Study Report are based on project design information under study at the time the environmental clearance document is to be requested. Based on the results, there is one residential land use that is predicted to be impacted by traffic noise during the project's design year (2045) with the build alternatives. An evaluation of noise abatement measures for the land use indicates that there are no feasible or reasonable measures to reduce the predicted impacted. Notably, the CTDOT's final recommendation regarding noise abatement will be made during the project's final design and public involvement process.

1.0 INTRODUCTION AND PROJECT BACKGROUND

The Connecticut Department of Transportation (CTDOT) is evaluating alternative improvements to the Route 7 and Route 15 (Merritt Parkway) interchange in Norwalk. Because the project meets the CTDOT's definition of a Type I project as stipulated in CTDOT's *Highway Traffic Noise Abatement Policy for Projects Funded by the Federal Highway Administration*, dated May, 16, 2017 [2] (CTDOT's Noise Policy), pursuant to Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) [1], a traffic noise study has been conducted to identify traffic noise-sensitive land uses within the study area, to predict if any of the land uses would be impacted by traffic noise in the design year with the proposed improvement to the interchange, and to consider abatement measures for any impacted land use. This Noise Study Report (NSR) documents the methodologies that were used to perform the highway traffic noise analysis and the results of the study.

The proposed project is located in the northern portion of the City of Norwalk. The project area encompasses the Route 7/15 interchange; the Route 15 and Main Avenue interchange; a segment of Main Avenue (State Road 719); and segments of Glover Avenue and Creeping Hemlock Drive in the vicinity of Main Avenue. The project area extends along Route 15 from approximately 0.5 miles west of Route 7 to approximately 0.5 miles east of Main Avenue and along Route 7 from approximately 0.5 miles south of Route 15 to approximately 0.5 miles north of Route 15. The project area is illustrated on **Figure 1.**

The purpose of the project is to improve roadway system linkage between Route 7 and Route 15 at Interchange No. 39; improve the mobility for vehicles at the Route 15 interchanges with Route 7 and Main Avenue (No. 39 & No. 40); improve the mobility for all users (motorists, pedestrians, and cyclists) along the immediate adjacent local roadway network (Main Avenue, Glover Avenue, and Creeping Hemlock Drive); and to improve safety in the vicinity of these interchanges.

Currently, Route 15 has two travel lanes in each direction and is restricted to non-commercial use. Route 15 (also known by its original name, the Merritt Parkway) is listed in the National Register of Historic Places for its significance in the areas of landscape design, transportation and architecture. It is also designated as a National Scenic Byway and State Scenic Road. Therefore, the overall character of Route 15 (its form, geometry and appearance) is an intrinsic element to its significance. In the project area, Route 15 carries traffic over Perry Avenue, Route 7 and Main Avenue as well as the Norwalk River and Metro North Railroad. This portion of Route 15 includes four historic bridges that are contributing resources to the National Register listing. They are the Perry Avenue Overpass (CTDOT Bridge No. 00719), the Main Avenue Bridge (Nos. 00530A and 00530B), the Metro North Railroad Overpass (No. 00720) and the Norwalk River Overpass (No. 00721).

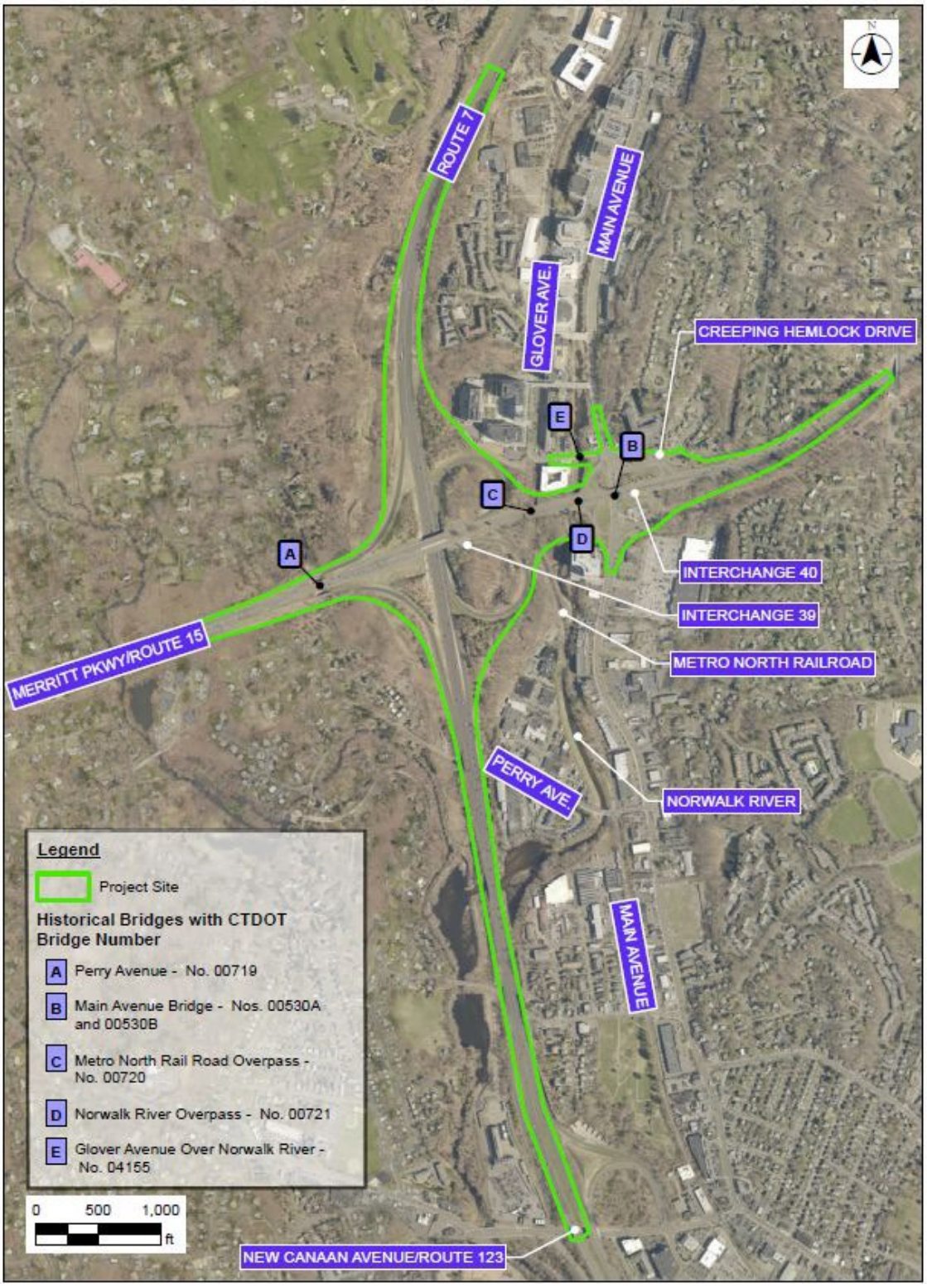

Figure 1 Project Site

Main Avenue is currently a four-lane urban minor arterial that parallels Route 7 and the Norwalk River and extends north and south of the Route 7/15 interchange.

CTDOT and the Federal Highway Administration (FHWA) are undertaking the project to address deficiencies of the existing interchanges and streets in the vicinity of the interchanges. Specifically, the existing Route 7/15 Interchange configuration does not provide the following connections between Route 15 and Route 7:

- Southbound (SB) Route 15 to northbound (NB) Route 7
- SB Route 15 to SB Route 7
- NB Route 7 to NB Route 15
- SB Route 7 to NB Route 15

Currently, there are approximately 250 vehicles during the weekday morning peak hour and approximately 125 vehicles during the weekday evening peak hour that use the Main Avenue corridor to connect between Route 7 and Route 15. These additional vehicles contribute to peak hour congestion along the Main Avenue corridor (Level of Service (LOS) D/E). Providing the above connections would allow access in all directions, eliminate the need for motorists to use Main Avenue to connect between Route 7 and Route 15, and improve the efficiency of motorists connecting between the roadways.

The existing Route 15 and Main Avenue interchange ramps have substandard acceleration and deceleration lanes, steep changes in grades, sharp curves, and limited sight distance. These are all conditions that contribute to a high number of crashes. Crash analyses were performed in order to determine how crash patterns at the interchanges compare to other locations along the 37-mile Merritt Parkway portion of the Route 15 corridor. Crashes per 0.5-mile segment were summarized based on crash records obtained through the Connecticut Crash Data Repository for the four-year period from January 2015 through December 2018. The highest density of crashes along the entire Merritt Parkway corridor occurs at the Exit 40 interchange with Main Avenue (refer to Figure 1.3.1 of the EA-EIE document). It is the only location which has more than 300 crashes within a 0.5-mile segment within the four-year analysis period.

1.1 EVALUATED ALTERNATIVES

In addition to evaluating design year (2045) traffic noise levels for the No Build Alternative, traffic noise levels were also predicted for two build alternatives—Alternative 21D and Alternative 26. The following briefly describes each of these alternatives.

1.1.1 No-Build Alternative

Under the No-Build Alternative, no substantial improvements to the operation, linkages, and capacity of the existing interchanges would be performed nor would substantial corridor landscape improvements occur beyond routine maintenance and/or spot safety improvements currently planned by CTDOT. The intersection and interchange geometry would remain as they currently exist within the Project Site.

1.1.2 Alternative 21D

Alternative 21D would complete the connections at Interchange 39 with traffic movements between Route 7, Route 15, and Main Avenue (see **Figure 2**). The existing Routes 7/15 interchange loop ramps would be retained in the easterly quadrants as would the direct connections in the westerly quadrants. The four remaining Routes 7/15 interchange movements would be achieved with semi-direct connections. Several towers of a power line may require relocation.

The dual historic Route 15 bridges (Bridge #00530A & B) over Main Avenue (Interchange 40) would be replaced and the bridge spans extended to allow for a widened roadway section. The increased span would provide space below for a wider Main Avenue and allow for the construction of additional left turn lanes to provide for left-turn movements and provide wider sidewalks and incorporation of bike facilities. This would facilitate the project's purpose related to improved mobility of both vehicles and other users (pedestrians, bicyclists, transit users). In addition to the existing signal at Glover Avenue and Main Avenue, two new signalized intersections would be provided along Main Avenue for a total of three-closely spaced signalized intersections. Glover Avenue would be widened and a replacement bridge would be constructed over the Norwalk River. Creeping Hemlock Drive would be realigned to the north and widened.

The four existing tight-loop ramps at Interchange 40 would be eliminated. Elimination of the existing ramps in the southwest quadrant of the Main Avenue interchange would allow for a long eastbound weaving lane between an eastbound Route 7 entry ramp and an improved exit loop ramp in the southeast quadrant of the Route 7 interchange.

In the westbound direction, the tight Route 15 exit loop ramp in the northwest quadrant (to southbound Main Avenue) would be eliminated. Longer Route 15 ramp acceleration and deceleration lanes would also be provided. The westbound entrance ramp would be built between a recently constructed residential apartment building and Route 15. As currently conceived, the new ramps would be at or below the elevation of Route 15.

In addition to the new ramps and roadways noted above, this alternative would require the construction of eleven (11) new bridges and modifications or replacements to three (3) existing bridges for expanded roadways and/or ramps. This includes replacement of two (2) historic bridges (Route 15 over Main Avenue and Glover Avenue over Norwalk River).

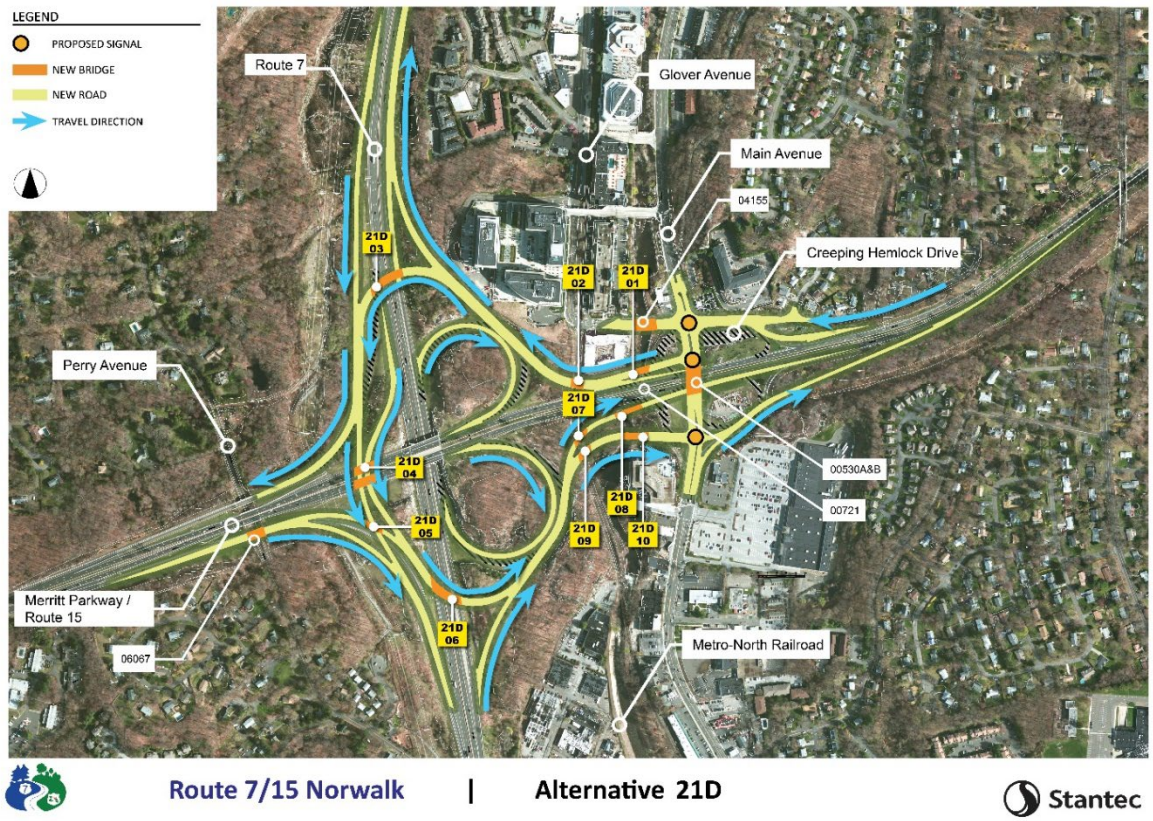

Figure 2 Alternative 21D

1.1.3 Alternative 26

Alternative 26 would complete the connections at Interchange 39 with traffic movements between Route 7, Route 15, and Main Avenue (See Figure 3). This alternative would introduce two signalized intersections along Route 7 to complete the partial interchange. A modified diamond interchange with Route 15 would retain the existing loop ramp in the northeast quadrant and the existing direct connector ramp in the southwest quadrant to optimize traffic operations at the two signalized intersections.

The loop ramp in the northeast quadrant would be reduced in size from the larger existing one, a change made possible by slower speeds on the reclassified Route 7 from a freeway to a signalized arterial. Three northbound and three southbound lanes would be necessary at the signalized Route 7/ramp intersections, with turn lanes at each Route 7 intersection approach. No powerline tower relocations are required for Alternative 26.

The dual historic Route 15 bridges (Bridge #00530A & B) over Main Avenue (Interchange 40) would be replaced and the bridge spans extended to allow for a widened roadway section. The increased span would provide space below for a wider Main Avenue and allow for the construction of additional left turn lanes to provide for left-turn movements and provide wider sidewalks and incorporation of bike facilities. This would facilitate the project's purpose related to improved mobility of both vehicles and other users (pedestrians, bicyclists, transit users). In

addition to the existing signal at Glover Avenue and Main Avenue, two new signalized intersections would be provided along Main Avenue for a total of three-closely spaced signalized intersections. Glover Avenue would be widened and a replacement bridge would be constructed over the Norwalk River. Creeping Hemlock Drive would be realigned to the north and widened.

The four existing tight-loop ramps at Interchange 40 would be eliminated. Elimination of the existing ramps in the southwest quadrant of the Main Avenue interchange would allow for an eastbound weave lane between an eastbound Route 7 entry ramp and an improved exit loop ramp in the southeast quadrant of the Route 7 interchange. In the westbound direction, the tight Route 15 exit loop ramp in the northwest quadrant would be eliminated. To avoid further weaving on the westbound Merritt Parkway for the southbound Main Avenue movement, an independent ramp would be located between the westbound weaving lane and the new residential building to the north.

In addition to the new ramps and roadways noted above, Alternative 26 would require the construction of four (4) new bridges and the replacement of two (2) existing historic bridges (Route 15 over Main Avenue and Glover Avenue over Norwalk River) to incorporate new or widened roadways or ramps.

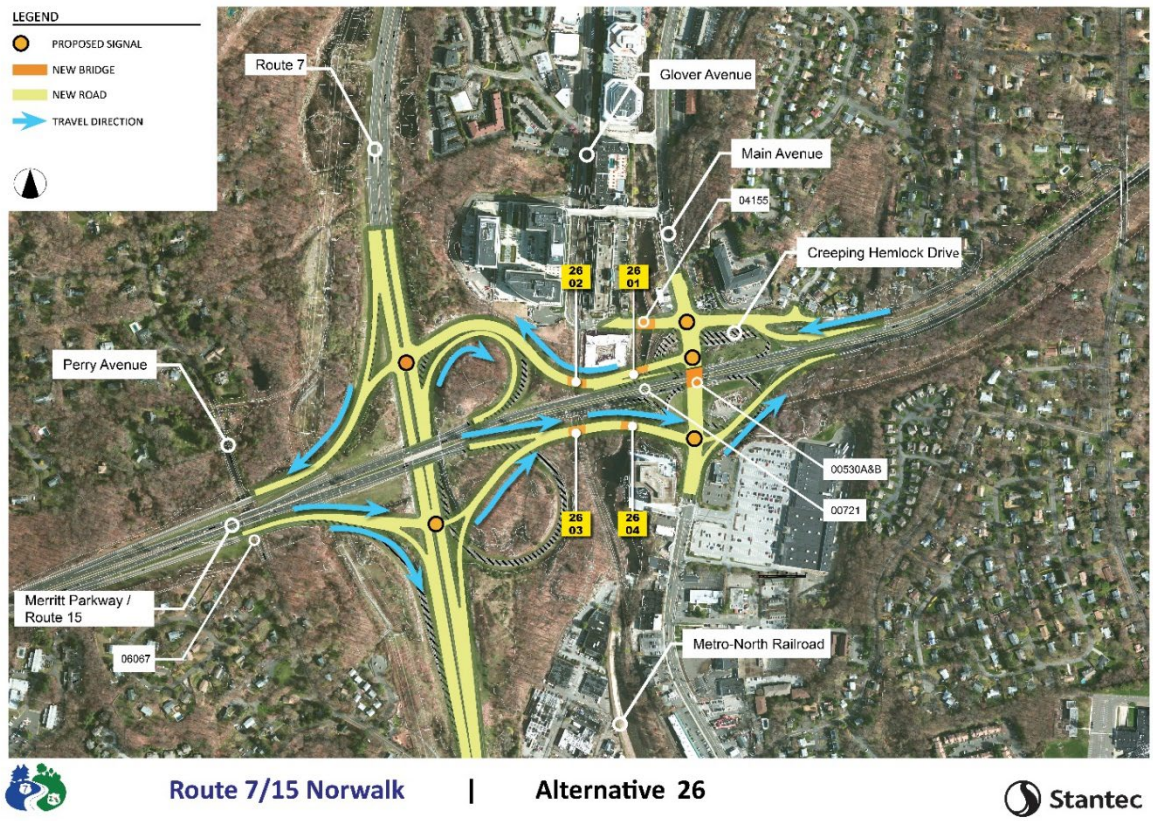

Figure 3 Alternative 26

2.0 EXISTING NOISE ENVIRONMENT

The land use west of Route 7 both north and south of Route 15 is primarily residential. East of Route 7 there is a mixture of residential and commercial land uses on both sides of the Parkway. The specific locations at which field measurements were obtained and where existing and design year worst-case traffic noise levels were predicted (**Figure 4**) are identified in a Highway Traffic Noise Analysis Protocol [3] (**Attachment A**). A field review of these locations was also performed December 1st through December 4, 2016. Notably, a review of recent (year 2020) aerial photographs of the project area and data from Norwalk's Tax Assessor (year 2020 data), indicates that there has not been a change in the land uses within the study from the time the field review was performed.

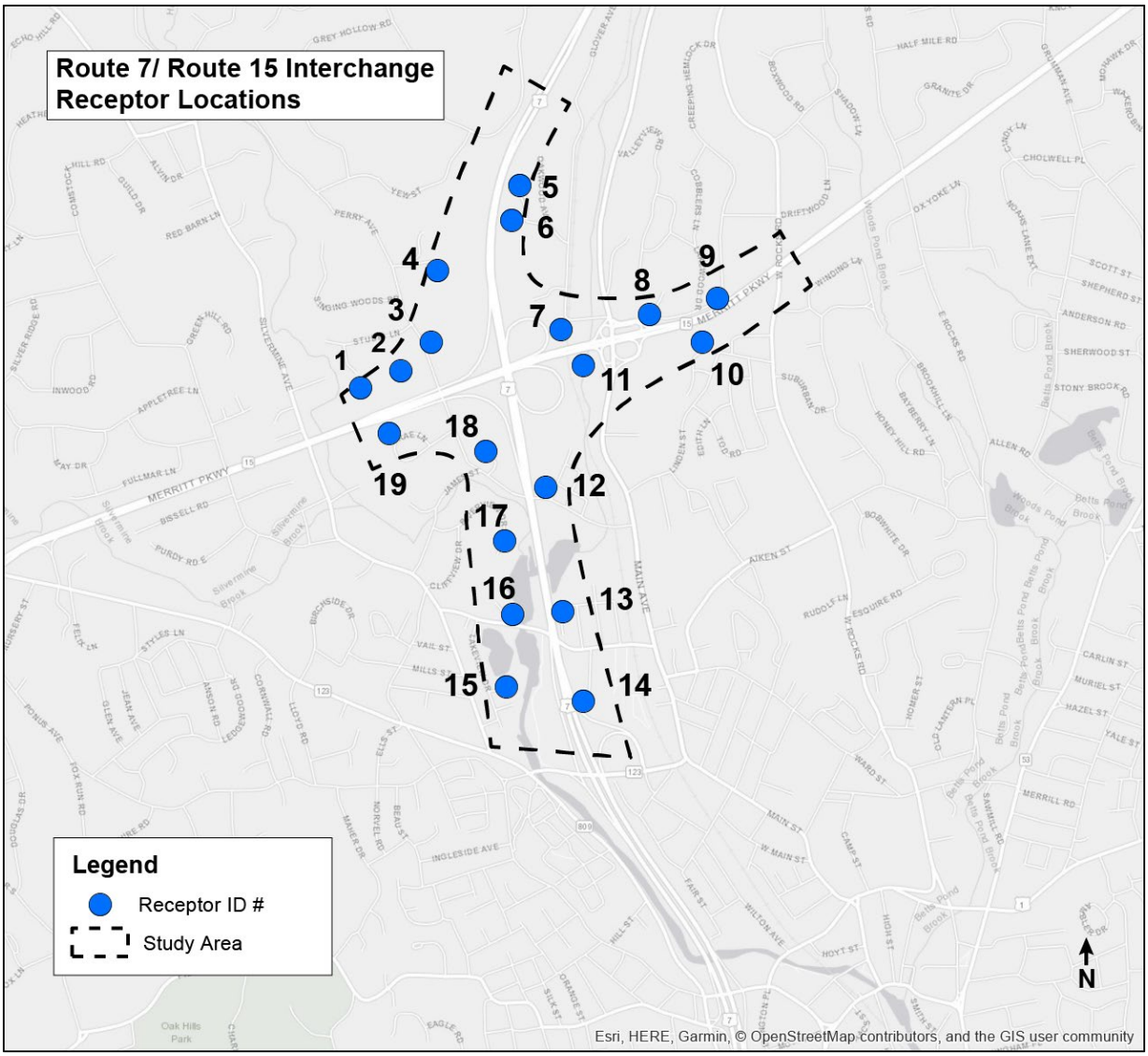

Figure 4 Noise Receptor Locations

2.1 NOISE STUDY AREAS

For the purpose of the presenting the results, the study area has been segregated into four Noise Study Areas (NSAs)—one NSA for each quadrant of the Route 7/15 interchange (i.e., one NSA for each of the northwest, northeast, southeast, and southwest quadrants of the Interchange). The following describes the land uses within each NSA that have the potential to be impacted by highway traffic noise in the design year with the proposed improvements:

- NSA 1 – The land uses in the northwest quadrant of the Route 7/15 interchange that have the potential to be impacted by highway traffic noise are single-family residences.
- NSA 2 – Within NSA 2 (the northeast quadrant), there is a mixture of single-family residences and residences in multi-family complexes. The multi-family complexes are Seir Hill Gardens, Skyview Gardens, and One Glover Apartments.
- NSA 3- The land uses in the southeast quadrant are comprised of single-family residences, a place of worship (Connecticut Korean Mission Church), and exterior uses at an office building (the MerrittView building).
- NSA 4 – Within NSA 4 (the southwest quadrant) there are both single- and multi-family residences.

The locations of the receptors (i.e., the computer modeled representative location of each noise sensitive land use) are illustrated on **Figure 4**. **Table 1** lists and further describes the location of the land uses.

Table 1. Receptor Locations

NSA	Receptor Number	Land Use	Activity Category	Description of NSA
1	1	Residential (SF)	B	North side of Route 15, between Silvermine Ave and Perry Ave.
	2	Residential (SF)	B	North side of Route 15, along Perry Ave.
	3	Residential (SF)	B	North side of Route 15, along Perry Ave.
	4	Residential (SF)	B	North side of Route 15, along Perry Ave.
2	5	Residential (MF)	B	Glenrock Condominiums, between Route 15 and Grist Mill Rd.
	6	Residential (MF)	B	Seir Hill Gardens and Skyview Gardens, between Route 15 and Grist Mill Rd.
	7	Residential (MF)	B	One Glover Apartments, north side of Route 15 between Route 7 and Main Ave.
	8	Residential (SF)	B	Between Main Ave and West Rocks Rd.
	9	Residential (SF)	B	Between Main Ave and West Rocks Rd.
3	10	Residential (SF)	B	Between Main Ave and West Rocks Rd.

NSA	Receptor Number	Land Use	Activity Category	Description of NSA
	11	Office Building	E	South side of Route 15 between Route 7 and Main Ave.
	12	Residential (SF)	B	North of Perry Ave.
	13	Place of Worship	C	Connecticut Korean Mission Church, north of Broad St.
	14	Residential (SF)	B	Between New Canaan Ave and Broad St.
4	15	Residential (SF)	B	Between New Canaan Ave and Broad St.
	16	Residential (SF)	B	Between Broad St and Perry Ave.
	17	Residential (SF)	B	Between Broad St and Perry Ave.
	18	Residential (MF)	B	North of Perry Ave.
	19	Residential (SF)	B	Between Silvermine Ave and Perry Ave.

NSA = Noise Study Area SF = single family MF = multi-family

Because the analysis was performed to determine if any land use for which there is a NAC would be impacted by traffic noise within the project limits, for residences, receptors were placed at the edge of the residence that is closest to the Route 7/15 Interchange (i.e., if no traffic noise impacts are predicted at the residence closest to the roadway, other residences within the area would not be impacted). The receptors at the place of worship and office building were located in the area of closest to the Interchange with frequent human use.

3.0 METHODOLOGY

The traffic noise levels in this NSR are reported as equivalent levels (Leq(h)), expressed in decibels on the A-weighted scale (dB(A)). Leq(h) levels are hourly equivalent steady-state sound levels that contain the same acoustic energy as time-varying sound levels over a period of one hour. Use of the A-weighted scale most closely approximates the response characteristics of the human ear to traffic noise.

The analysis was performed following procedures outlined in the CTDOT's July 2011 version of their Noise Policy [4]. In May of 2017, the CTDOT updated the Noise Policy [2] but the revisions to the document did not change the methodology used to evaluate traffic noise, the version of the computer model used to predict traffic noise levels, nor the criteria by which a highway traffic noise impact is predicted.

Traffic noise abatement for CTDOT highway projects is warranted and must be considered when the traffic noise for a design year build condition either:

- Approaches (within 1 dB(A)), meets, or exceeds the Noise Abatement Criteria (NAC) in Title 23, Part 772 of the Code of Federal Regulation (23 CFR 772)—see **Table 2**, or
- Traffic noise levels with the proposed improvement is predicted to substantially increase (by 15 dB(A) or more) from existing traffic noise levels.

Table 2. Federal Highway Administration Noise Abatement Criteria

Activity Category	Activity Criteria Leq(h)	Evaluation Location	Activity Description
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[1]	67	Exterior	Residential.
C[1]	67	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational 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.

Activity Category	Activity Criteria Leq(h)	Evaluation Location	Activity Description
E[1]	72	Exterior	Hotels, motels, offices, restaurants/bars and other developed lands, properties or activities not included in A-D or F.
F	-----	-----	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing.
G	-----	-----	Undeveloped lands that are not permitted.

[1] Includes undeveloped lands permitted for this activity category.
Leq(h) = Hourly equivalent steady-state sound levels that contain the same acoustic energy as time-varying sound levels over a period of one hour.

For comparative purposes, the typical noise levels of common indoor and outdoor activities are provided in **Table 3**. As shown, activities that could result in a noise levels from 60 to 70 dB(A), the range of sound for which the approach criteria for Activity Category B and C land uses are applicable (see **Table 2**), include conversational speech, air conditioners, showers, and dishwashers.

Table 3. Typical Sound/Noise Levels

dB(A)	Example	Home and Yard Appliances	Workshop and Construction
0	Healthy hearing threshold		
10	A pin dropping		
20	Rustling leaves		
30	Whisper		
40	Babbling brook	Computer	
50	Light traffic	Refrigerator	
60	Conversational speech	Air conditioner	
70	Shower	Dishwasher	
75	Toilet flushing	Vacuum cleaner	
80	Alarm clock	Garbage disposal	
85	Passing diesel truck	Snow blower	
90	Squeeze toy	Lawn mower	Arc welder
95	Inside subway car	Food processor	Belt sander
100	Motorcycle (riding)		Handheld drill

Source: Noise Help https://www.noisehelp.com/

Following CTDOT's Noise Policy, traffic noise impacts for the proposed improvements to the Route 7/15 interchange were predicted to occur as follows:

- Residential land uses, which were evaluated as NAC Activity Category B, were predicted

to be impacted if the design year traffic noise level with the improvements was 66 dB(A) or more or, if the design year level with the improvements increased 15 dB(A) or more when compared to the existing level.

- The exterior use of the office building, evaluated as NAC Activity Category E, was predicted to be impacted if the design year traffic noise level with the improvements was 71 dB(A) or more or, if the design year level with the improvements increased 15 dB(A) or more when compared to the existing level.
- The exterior use area of the place of worship, evaluated as NAC Activity Category C, was predicted to be impacted if the design year traffic noise level with the improvements was 66 dB(A) or more or, if the design year level with the improvements increased 15 dB(A) or more when compared to the existing level.

3.1 Measured Existing Sound Levels

The traffic noise analysis was performed using Version 2.5 of the FHWA's Traffic Noise Model (TNM®) [5]. To verify the accuracy of the TNM, the model's ability to predict highway traffic noise was validated using measured ambient sound levels adjacent to the project corridor. Traffic data including; motor vehicle volumes, vehicle mix, vehicle speeds, and meteorological conditions were recorded during each measurement period. The field measurements were conducted in accordance with the FHWA's *Measurement of Highway-Related Noise* [6] [7].

The measurements were obtained using a Larson Davis 831 Type I integrating sound level meter (SLM) and the SLM was calibrated before and after the measurement periods with a Larson Davis CAL200 calibrator. Copies of the calibration certifications for the sound level meters and the calibrator are provided in **Attachment B** of this NSR.

The recorded traffic data during each measurement period were used as input for the TNM to determine if, given the topography and site conditions of the area, the computer model could "re-create" the measured sound levels. Following CTDOT [2] guidelines, a noise prediction model is considered within an accepted level of accuracy if the measured sound levels and the computer predicted traffic noise levels are within a tolerance limit of 3 dB(A). The field data sheets, and a summary of the data collected during each measurement period, are also provided in Attachment B.

For the purpose of validating the TNM for use in predicting traffic noise levels with and without the proposed improvements to the Route 7/15 interchange, sound level measurements were obtained at 14 of the 19 receptors with measurements obtained both in the morning and the afternoon at four of the 14 receptors. The measured sound levels and the TNM-predicted traffic noise levels at each measurement location are also provided in Attachment B. Because the measured sound levels and modeled traffic noise levels, are within the tolerance level. the TNM's ability to predict highway traffic noise was validated.

4.0 PREDICTED HIGHWAY TRAFFIC NOISE

This section of this NSR summarizes the modeled existing (year 2016) highway traffic noise levels and modeled design year (2045) levels without the improvements to the Route 7/15 interchange (i.e., the No-Build Alternative) and with the two proposed improvement alternatives--Build Alternative 21D and Build Alternative 26. The modeled traffic noise levels for each evaluated receptor are provided in **Attachment C** to this Memorandum. The existing and forecast design year AM and PM peak hour motor vehicle demand data (volumes, speeds, and truck percentages) that were used in the TNM are provided in **Attachment D**.

4.1 MODELED EXISTING TRAFFIC NOISE LEVELS

The results of the analysis indicate that for existing conditions (year 2016), the predicted traffic noise levels during the AM and PM periods range from 52 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7. Notably, although the predicted existing noise level at Receptor 7 (a residential unit in the One Glover Apartment complex) is greater than the NAC for a residential land use, the predicted level is not considered a traffic noise impact. As previously stated, CTDOT's Noise Policy defines a traffic noise impact as a predicted level with a design year build condition that approaches, meets, or exceeds the NAC.

4.2 MODELED DESIGN YEAR TRAFFIC NOISE LEVELS

The TNM predicted highway traffic noise levels for the design year of the project (year 2045) for the No Build Alternative and Build Alternatives 21D and 26 are summarized in this section of this NSR.

4.2.1 No-Build Alternative

In the design year with the No Build Alternative in the AM, traffic noise levels are predicted to range from 53 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7. The traffic noise is predicted to remain the same at a majority of the evaluated receptors with an increase of 1 dB(A) predicted at Receptors 1 through 6 and 19. Notably, in an ambient (i.e., outdoor) environment, increases in traffic noise less than 3 dB(A) are not considered to be detectable to the human ear.

In the design year with the No Build Alternative in the PM, traffic noise levels are predicted to range from 52 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7 and traffic noise is predicted to remain the same at a majority of the evaluated receptors with increases of 1 to 2 dB(A) predicted at Receptors 1 through 3 and 10 through 12.

4.2.2 Alternative 21D

In the design year with Alternative 21D traffic noise levels in the AM are predicted to range from 53 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7—levels that would remain the same as existing levels at a majority of the evaluated receptors; while increasing 1 dB(A) at Receptors 1 through 6 and decreasing 2 dB(A) at Receptor 11. When the predicted AM traffic noise levels

with Alternative 21D are compared to levels with the No-Build Alternative, the levels would remain the same at a majority of the evaluated receptors while decreasing 2 and 1 dB(A) at Receptors 11 and 19, respectively. The decrease in traffic noise is attributable to a forecast decrease in the volume of peak hour vehicles on the section of Route 15 near Receptor 11. In the AM, traffic noise levels are predicted to exceed the NAC at Receptor 7, the evaluated residence in One Glover Apartments. Notably, the results of the analysis do not indicate that highway traffic noise would increase substantially at any of the evaluated receptors.

PM traffic noise levels are predicted to range from 52 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7—levels that would remain the same as existing levels at a majority of the evaluated receptors, while increasing 1 dB(A) at Receptors 1 through 3, 10, and 12. When the predicted PM traffic noise levels with Alternative 21D are compared to levels with the No-Build Alternative, with the exception of a predicted 2 dB(A) decrease at Receptor 11, the levels would remain the same at the evaluated receptors. Again, the decrease in traffic noise is attributable to a forecast decrease in the volume of peak hour vehicles on the section of Route 15 near Receptor 11. As for the AM predictions, traffic noise is not predicted to increase substantially and levels are predicted to exceed the NAC at Receptor 7.

4.2.3 Alternative 26

In the design year with Alternative 26, AM traffic noise levels are predicted to range from 53 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7—levels that would remain the same as existing levels at a majority of the evaluated receptors; increasing 1 dB(A) at Receptors 1, 2, 4 through 6, 18, and 19, and decreasing 1 dB(A) at Receptor 11. When the predicted AM traffic noise levels with Alternative 26 are compared to levels with the No-Build Alternative, with the exception of predicted traffic noise at Receptors 11 (1 dB(A) decrease) and 18 (1 dB(A) increase), the levels would remain the same at the evaluated receptors. The decrease in traffic noise at Receptor 11 is attributable to a forecast decrease in the volume of peak hour vehicles on the section of Route 15 near Receptor 11. In the AM traffic noise levels are also predicted to exceed the NAC at Receptor 7. Notably, the results do not indicate that highway traffic noise would increase substantially at any of the evaluated receptors with Build Alternative 26.

PM traffic noise levels are predicted to range from 52 dB(A) at Receptor 4 to 71 dB(A) at Receptor 7—levels that would remain the same as existing levels at a majority of the evaluated receptors, while increasing 1 dB(A) at Receptors 1 through 3, 10, 12, and 18. When the predicted PM traffic noise levels with Alternative 26 are compared to levels with the No-Build Alternative, with the exception of predicted traffic noise at Receptors 11 (2 dB(A) decrease) and 18 (1 dB(A) increase), the levels would remain the same at the evaluated receptors. As for the AM results, the decrease in traffic noise at Receptor 11 is attributable to a forecast decrease in the volume of peak hour vehicles on the section of Route 15 near Receptor 11. Again, PM traffic noise levels are predicted to exceed the NAC at Receptor 7 and highway traffic noise would not increase substantially at any of the evaluated receptors.

5.0 CONSIDERATION OF ABATEMENT

As stated in Section 4 of this NSR, traffic noise abatement measures for CTDOT highway projects are warranted and must be considered when the traffic noise with a proposed improvement approaches, meets, or exceeds the NAC in 23 CFR 772 or when predicted levels in the design year would increase substantially (by 15 dBA or more) when compared to existing levels. None of the predicted levels exceeded existing levels by 15 dBA. Because the results of the highway traffic noise analysis presented in this NSR indicates that traffic noise would exceed the NAC at Receptor 7 (One Glover Apartments), the following noise abatement measures were considered for Build Alternative 21D and Build Alternative 26:

- Traffic management measures,
- Alteration of horizontal and vertical alignments,
- Establishment of buffer zones, and
- Noise barriers.

In the consideration of abatement, CTDOT's year 2017 Noise Policy stipulates that all of the following feasibility conditions must be met in order for a noise abatement measure to be justified and incorporated into a project's design:

1. The measure must provide a noise reduction of 5 dB(A) for a minimum of two-thirds of the impacted receptors. Notably, a reduction in traffic noise of 5 dB(A) is considered to be readily detectable and a receptor receiving a reduction of this level is considered to be benefited by an abatement measure.
2. Consideration must be given to the adverse impacts that could be created by a noise abatement measure on property access, drainage, topography, utilities, safety, and maintenance requirements.

Additionally, all of the following reasonableness conditions must also be met in order for noise abatement to be justified and incorporated into a project's design:

1. A noise reduction design goal of at least 7 dB(A) must be met for a minimum of two-thirds of the benefited receptors.
2. The viewpoints of benefited property owners must be solicited and two-thirds of the returned viewpoints must be in favor of an abatement measure.
3. The cost of the abatement measure must have a Cost Effective Index (CEI) that is less than or equal to $55,000 per benefited receptor[1]. Notably, in the consideration of

[1] In the calculation of costs per benefited receptor, the number of benefited properties represented by a receptor is considered.

noise barriers as an abatement measure, an estimated cost of $60 per square foot is assumed in the calculation of the CEI.

5.1 TRAFFIC MANAGEMENT

Traffic management measures involve prohibiting/limiting truck traffic or reducing the speed limit. However, these measures also negate a project's ability to accommodate forecast traffic volumes. For example, if the posted speed were reduced, the capacity of the roadway to handle the forecast motor vehicle demand would also be reduced. Therefore, reducing traffic speeds and/or the traffic volumes or fleet is inconsistent with the goal of improving the ability of the roadway to handle the forecasted traffic volumes. As such, traffic management is not considered a reasonable noise mitigation measure to reduce the design year predicted traffic noise impact with Build Alternative 21D or Build Alternative 26.

5.2 ALIGNMENT MODIFICATIONS

Modifying the horizontal and/or vertical alignment of a roadway can also be an effective traffic noise mitigation measure when the horizontal alignment is shifted (i.e., moved) away from a noise sensitive property or when the vertical alignment is shifted below (i.e., placing the roadway below the elevation of a noise sensitive land use) or above a noise sensitive property. The proposed improvements would be constructed within the existing roadway alignment. Because shifting the alignment horizontally would require right-of-way acquisitions and, because noise sensitive land uses are located on all sides of the roadways, a modification to the alignment for the purpose of reducing traffic noise impacts is not considered to be a reasonable noise abatement measure to reduce the predicted traffic noise impact with Build Alternative 21D or Build Alternative 26.

5.3 BUFFER ZONES

Providing a buffer between a roadway and noise sensitive land uses is an abatement measure that can minimize/eliminate noise impacts. To abate traffic noise at an existing noise sensitive land use, the property would be acquired to create a buffer zone. Buffer zones can also be used to eliminate the potential for new noise sensitive land uses to be impacted by traffic noise. To abate predicted traffic noise at an existing noise sensitive land use, the property would have to be acquired. Because the cost to do so would exceed the CEI of $55,000 per benefited receptor, this abatement measure is not considered to be a reasonable measure to reduce or eliminate the predicted traffic noise impact with Build Alternative 21D or Build Alternative 26.

5.4 NOISE BARRIERS

The most common type of noise abatement measure is construction of a noise barrier. Noise barriers have the potential to reduce traffic noise levels by interrupting the sound path

between motor vehicles on a roadway (the source) and noise sensitive land uses adjacent to the roadway. In order to effectively reduce traffic noise, a noise barrier must be relatively long, continuous (without intermittent openings) and sufficiently tall.

Using the TNM, a noise barrier was evaluated to determine if a barrier would reduce the predicted design year traffic noise impact at Receptor 7, One Glover Apartments. The barrier was evaluated along the shoulder of Ramp D and Ramp WS. A barrier at this location would parallel the south side of the apartment building. Because the roadway is on structure in this area (bridges and retaining walls), the noise barrier was evaluated at a maximum height of 8 feet.[2] Based on results from the TNM, the optimal length of a noise barrier was determined to be 670 feet.

Twenty-eight receptors were evaluated to represent the individual units of the apartment building. Of the 28 units, 16 are predicted to be impacted with Build Alternative 21D, and 17 are predicted to be impacted with Build Alternative 26. The results of the evaluation indicate that a noise barrier would only provide the minimum noise reduction of 5 dB(A) at one of the evaluated residences, regardless of the build alternative.

Because the CTDOT requires a noise abatement measure to provide a noise reduction of 5 dB(A) for a minimum of two-thirds of the impacted receptors/residences (i.e., for the impacted units in One Glover Apartments, 11 units would have to be benefited by a noise barrier with either build alternative), a noise barrier is not considered to be a feasible abatement measure for the impacted units/residences.

5.5 STATEMENT OF LIKELIHOOD

The results of the traffic noise analysis presented in this NSR are based on project design information under study at the time the environmental clearance document is to be requested. Based on the results, there is one land use for which there are NAC that is predicted to be impacted by traffic noise during the project's design year (2045) with either build alternative. An evaluation of noise abatement measures for the land use indicates that there are no feasible or reasonable measures to reduce the predicted impact. Notably, the CTDOT's final recommendation regarding noise abatement will be made during the project's final design and public involvement process.

[2] As documented in the October 25, 2016 Highway Traffic Noise Analysis Protocol for the Route 7/15 interchange, structure barriers were evaluated at a maximum height of 8 feet.

6.0 CONSTRUCTION NOISE

As documented in this NSR, there are noise-sensitive land uses within the project study area (i.e., residences, a cemetery, a place of worship, and the exterior use of an office building). However noise generated during construction of the proposed roadway improvements is not expected to be long in duration, and relatively minor in nature. In addition, mitigation of noise during construction will be undertaken through compliance with Section 1.10 (Environmental Compliance) of CTDOT's *Standard Specifications for Roads, Bridges and Incidental Construction* [8] (Form 817). This document specifies requirements for noise control mitigation during active construction, and is described below.

- *The Contractor shall take measures to minimize the noise caused by its construction operations, including but not limited to noise generated by equipment used for drilling, pile-driving, blasting, excavation or hauling.*

  All methods and devices employed to minimize noise shall be subject to the continuing approval of the Engineer. The maximum allowable level of noise at the residence or occupied building nearest to the Site shall be 90 decibels on the "A" weighted scale (dBA). The Contractor shall halt any Project operation that violates this standard at any time until the Contractor develops and implements a methodology that enables it to keep the noise from its Project operations within the 90 dBA limit.

7.0 PUBLIC INVOLVEMENT

Throughout the development of the Environmental Assessment (EA) and Environmental Impact Evaluation (EIE) for proposed improvements to the Route 7/15 interchange, there has been extensive public involvement and agency coordination with meetings beginning in the summer of 2016.

During the Public Information Meetings noted no specific concerns were noted by the general public with respect to potential traffic noise impacts except for the following questions:

- Meeting October 17, 2016: *Will there be an evaluation of traffic noise?*

The response was that "*A detailed noise study will be a component of the environmental documentation*".

- Meeting December 7, 2016: *Will sound barriers be constructed?*

The response was that "*There will be a complete noise analysis completed with recommendations for sound mitigation*."

- Meeting October 23, 2019: *The area behind Main Avenue (southwest of the Merritt Parkway/Main Avenue interchange) is park-like and has a serene feel. Will there be more noise, pollution, or extra traffic?*

The response was that "*These factors are being assessed during the [Environmental Assessment] EA process"*. As stated in the response during the Public Information Meeting, this study was prepared to address potential traffic noise impacts due to the Project. The study found that the closest receptor (Receptor 11) to the area identified by the commenter showed a TNM predicted traffic noise levels that would decrease slightly when compared to the No-Build Alternative.

Notably, as the project progresses and the EA is finalized, any noise concerns raised at additional public and agency meetings will be addressed.

8.0 COORDINATION WITH LOCAL OFFICIALS

To reduce the potential for design year traffic noise-related impacts, Noise Impact Zones (NIZs) were developed for the improved roadway facility. These zones delineate the extent of the predicted traffic noise impact area from the improved roadway's edge-of-travel lane for each of the land use Activity Categories (**Table 2**). For the purpose of providing the impact distances, the study limits were divided in to nine areas--NIZs A through I. The locations of the nine areas are illustrated on **Figures 5 and 6** for Alternative 21D and Alternative 26, respectively.

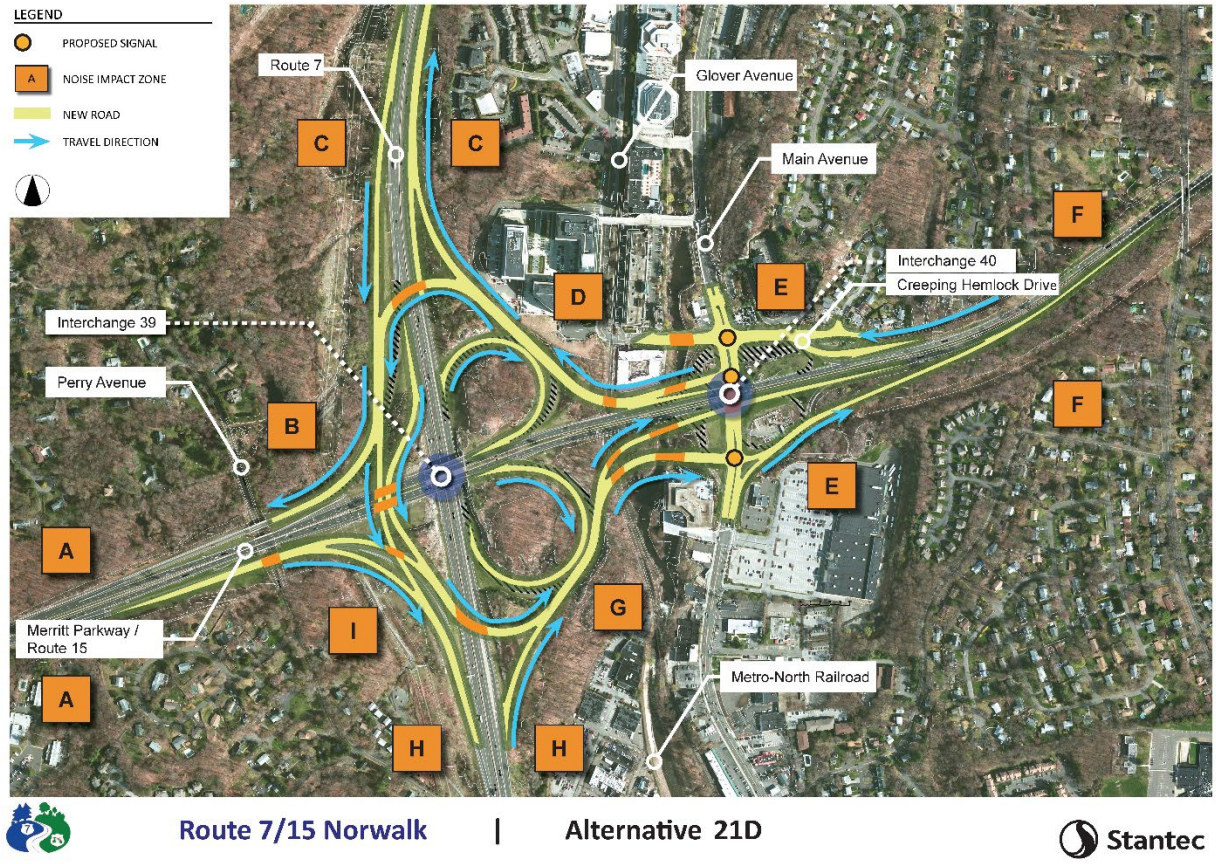

Figure 5 Alternative 21D

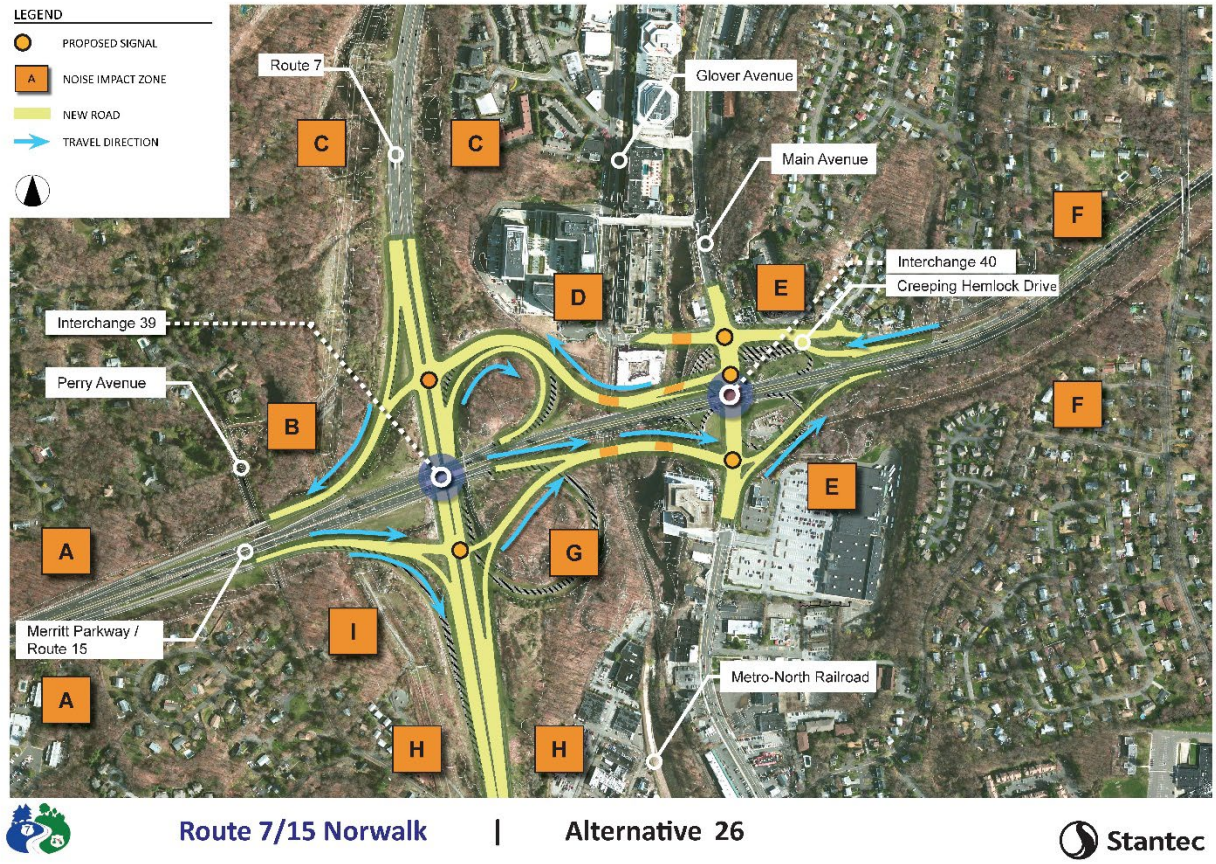

Figure 6 Alternative 26

Table 4 provides the NIZ distances at which traffic noise levels are predicted to be 56 dB(A)—CTDOT's noise abatement approach criteria for land uses classified as Activity Category A, 66 dB(A)—the approach criteria for land uses classified as Activity Category B and C, and 71 dB(A)—the approach criteria for land uses classified as Activity Category E. Notably, with the exception of NIZ G, the distances from the roadway for Alternatives 21D and 26 are the same. Additionally, because the NIZ distances were derived using the average ground elevation within each area and no reduction in traffic noise was considered that would occur from existing structures (i.e., shielding), the distances should be used for planning purposes only. Use of the limits in Table 4 by local officials will promote compatibility between future land development in the study area.

Table 4 Noise Impact Zones

Noise Impact Zone	Description of Area	Distance from Improved Roadway's Edge-of-Travel Lane (feet)*		
		Activity Category A 56 dB(A)	Activity Category B/C 66 dB(A)	Activity Category E 71 dB(A)
A	Route 15 West of Interchange	500	220	120
B	Northwest Quadrant of the Route 7/15 Interchange	500	N/A	N/A
C	Route 7 North of Interchange	450	180	90
D	Northeast Quadrant of the Route 7/15 Interchange	500	160	N/A
E	East of Main Avenue	500	210	30
F-Alt 21D	Route 7 East of Interchange	300	160	70
F- Alt 26	Route 7 East of Interchange	390	N/A	N/A
G	Southeast Quadrant of the Route 7/15 Interchange	430	N/A	N/A
H	Route 7 South of Interchange	410	N/A	N/A
I	Southwest Quadrant of the Route 7/15 Interchange	480	25	N/A

* See Table 2 for a description of the activities that occur within each category.
N/A = Not applicable

9.0 References

[1] *Procedures for Abatement of Highway Traffic Noise and Construction Noise, 23 CFR Section 772,* 2010.

[2] CTDOT, "Highway Traffic Noise Abatement Policy for Projects Funded by the Federal Highway Administration," 2017.

[3] KB Environmental Sciences, *Highway Traffic Noise Analysis Protocol, Route 7/Route 15 Interchange, City of Norwalk,* 2016.

[4] CTDOT, *Highway Traffic Noise Abatement Policy for Projects Funded by the Federal Highway Administration,* 2011.

[5] FHWA, "Traffic Noise Model," 2004.

[6] C. S. Lee and G. G. Fleming, "FHWA, Measurement of Highway-Related Noise," FHWA, 1996.

[7] FHWA, "Noise Measurement Handbook," 2018.

[8] CTDOT, "Standard Specifications for Roads, Bridges and Incidental Construction," 2019.

[9] FHWA, "Analysis and Abatement Guidance; Appendix G: Highway Traffic-Induced Vibration," [Online]. Available: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/analysis_and_abatement_guidance/polguide09.cfm. [Accessed 12 2019].

ATTACHMENTS

Attachment A – Highway Traffic Noise Protocol

Note: Subsequent to preparation of the Highway Traffic Noise Protocol, the study area was reduced. The reduction was made based on more accurate development of the alternative concepts for the improvements to the Route 7/15 Interchange.

2nd Draft

Highway Traffic Noise Analysis Protocol

Route 7/Route 15 Interchange

City of Norwalk

Prepared by:

KB Environmental Sciences

October 25, 2016

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1. Introduction

KB Environmental Sciences, Inc. (KBE) is preparing a highway traffic noise analysis and environmental documentation for the preliminary design phase of Project No. 102-358 which would improve the Route 7 and Route 15 Interchange (**Figure 1**) in Norwalk, Connecticut. This Protocol outlines the methodologies and assumptions that would be used to perform the highway traffic noise analysis.

2. Applicable Regulations and Policies

The highway traffic noise analysis will be performed to comply with the requirements in Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772-*Procedures for Abatement of Highway Traffic Noise and Construction Noise*) and the Connecticut Department of Transportation's (CTDOT's) *Highway Traffic Noise Abatement Policy for Projects Funded by the Federal Highway Administration* (July 2011). The CTDOT's document is hereafter referred to as CTDOT's "Policy".

3. Traffic Noise Prediction

The highway traffic noise analysis will be performed using the Federal Highway Administration's (FHWA's) Traffic Noise Model (TNM-Version 2.5). The following presents an additional factor that may be assumed for the analysis.

- Pavement Type -Average pavement type will be assumed for the prediction of future noise levels. Based on sound level measurements obtained for the purpose of validating the TNM, and in consultation with CTDOT, a pavement type other than the average type may be assumed for the existing pavement.

3.1 Noise Impact Determination

A field review of the project study area will be performed. During the field review non-highway traffic sources of sound (I.e., noise) will be identified and a determination will be made as to whether any "other noise sources" need to be considered in the evaluation of any abatement measure (e.g., noise barriers).

Land with a use for which the FHWA/CTDOT have established Noise Abatement Criteria (NAC) will be determined to be impacted by highway traffic noise if the TNM results at any computer modeled receptor (discrete/representative locations of a noise sensitive land use) on the property approaches (within one decibel on the "A"-weighted scale [dB(A]), meets, or exceeds the NAC (Table 1 of CTDOT's Policy). Land uses for which there are established NAC will also be determined to be impacted if a comparison of the TNM-predicted traffic noise for the existing roadway configuration and traffic volumes/speeds to predicted traffic noise with the improved configuration and future volumes/speeds indicates that highway traffic noise would increase 15 dB(A) or more.

For the purpose of determining if a land use is impacted, receptors shall be modeled at a location closest to the roadway within exterior areas of frequent human use. If no exterior areas are identified at which there would be frequent human use at properties designated by the FHWA/CTDOT to be Activity Category "D" (e.g., auditoriums, day care centers, hospitals, etc.) receptors will be modeled at locations within interior areas of frequent human use that are closest to the roadway.

3.2 Consideration of Abatement Measures

The following abatement measures will be considered for each noise sensitive land use determined to be potentially impacted by the proposed improvements to the Route 7/Route 15 interchange:

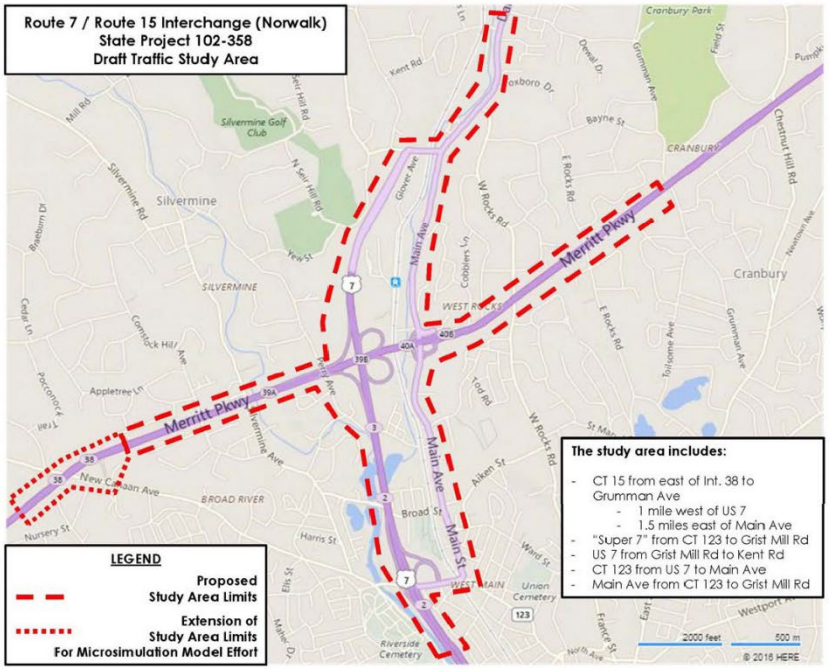

Figure 1 – Project Study Area

- Construction of noise barriers
- Traffic management (e.g., a reduction in the speed limit)
- Alteration of the horizontal or vertical alignment of the proposed improvements
- Buffer zones
- In consultation with the CTDOT, sound level (i.e., noise) insulation for Activity Category D land uses

The feasibility and the reasonableness of providing each of the measures above will be discussed in a Noise Study Report (NSR) that will be prepared to document the highway traffic noise methodologies and the results of the analysis. A measure will be determined to be feasible if the measure provided at least a five dB(A) reduction in traffic noise for at least two-thirds of the impacted receptors in a common noise environment (CNE). A review of engineering factors that would negate CTDOT's ability to implement or construct a measure will be performed by Stantec (e.g., drainage, utility, safety and maintenance conflicts). If a measure is determined to be feasible, the reasonableness of providing the measure to reduce traffic noise will also be evaluated. Based on the Activity Category of a land use, the reasonableness evaluation will be performed as described below.

Land with Activity Category A and B Uses

There are no lands within the Route 7/Route 15 Interchange study area for which the land use would be categorized as Activity Category A (lands on which serenity and quiet are of extraordinary significance). The reasonableness evaluation for Activity Category B lands (residences) will be performed as follows:

- Level 1 – A measure will be considered potentially reasonable if the measure reduces traffic noise at least 7 dB(A) for at least two-thirds of the benefited receptors (i.e., the receptors that receive at least a five dB(A) reduction in traffic noise). If a measure would not reduce traffic noise at least 7 dB(A) for two-thirds of the benefited receptors, the measure will be considered unreasonable. If a measure would reduce traffic noise at least 7 dB(A) for two-thirds of the benefited receptors, Level 2 of the reasonableness evaluation would be performed.
- Level 2 – Assuming an abatement cost estimated by Stantec and/or KBE to implement traffic management, shift the alignment of a roadway or provide buffer zones and a noise barrier construction cost provided by CTDOT[1], a measure will be determined to be potentially reasonable if the cost of the measure does not exceed $55,000 per benefited receptor.[2] If the cost of the measure would exceed $55,000 per benefited receptor, no further evaluation of the reasonableness of the measure will be performed. If the cost would not exceed $55,000 per benefited receptor, the viewpoints of the benefited property owners/tenants of the property would be solicited through a mailed survey. Based on the response to the survey, KBE would make the final determination of reasonableness in consultation with the CTDOT.

[1] CTDOT's Policy references a $60 a square foot noise barrier construction cost for Activity Category C, D, and E land uses.
[2] The application of a cost criteria of $55,000 per benefited receptor will consider whether a receptor represents one or more than one parcel of land.

Land with Activity Category C Land uses and Activity Category D and E Facilities

Within the study area there are lands for which the use is categorized as Activity Category C (e.g., the Silver Mine Golf Club), potential Activity Category C facilities (e.g., the interior of the Parkway Assembly of God) and Activity Category D (e.g., Hotel Zero Degrees). The reasonableness evaluation for these land uses will be based on a cost criteria of $170 per dB(A) of sound level reduction per person per hour ($/dB(A)IL/person/hour) where:

$ = The total cost of the noise abatement
db(A)IL = The average insertion loss of benefited receptors
Persons = The number of benefited receptors per day
Hour = Average time per visit

The evaluation of these land uses will be performed as follows:

- Level 1 - A measure will be considered potentially reasonable if the measure reduces traffic noise at least seven dB(A) for at least two-thirds of the impacted and benefited area of the land use. If a measure would not reduce traffic noise at least seven dB(A) for two-thirds of the area, measure will be considered unreasonable. If a measure would reduce traffic noise at least seven dB(A) for two-thirds of the area, Level 2 of the reasonableness evaluation would be performed.
- Level 2 – Using CTDOT's cost criteria of $170/dB(A)IL/person/hour, the number of persons required to be benefited per day for an abatement measure to be reasonable will be derived. If the calculated number of persons is unreasonable (e.g., 5000 persons in a place of worship with a capacity of 500), then a measure will be considered unreasonable. If the calculated number of persons is within a range that could occur (e.g., 600 persons at the place of worship), Level 3 of the reasonableness evaluation would be performed.
- Level 3 - The owner of the subject property will be contacted to obtain property-specific use information which will be used to determine the final cost reasonableness of the abatement measure.

4. Sound Level Measurements/Validation of the TNM

Sound level measurements will be obtained with the project study area to confirm that highway traffic is the primary source of noise and to validate that the TNM accurately predicts existing traffic noise. The measurements will be obtained in accordance with the Federal Highway Administration's (FHWA's) *Measurement of Highway-Related Noise* (May 1996). For the purpose of validating the TNM, monitoring will be performed for a minimum of 30 minutes (three repetitions of ten minutes each) using a Larson Davis Model 831, Type II integrating sound level meter. The meter will be calibrated before and after each measurement period with a Larson Davis CAL200 calibrator.

During each measurement period, meteorological conditions and the number of motor vehicles by vehicle classification (i.e., cars, medium trucks, heavy trucks, buses and motorcycles) will be documented as well as other sources of sound that could affect the results of the validation. Using a radar gun, a sampling of vehicle speeds by vehicle classification will also be obtained (the goal to obtain an accurate representation of the speeds of the vehicle types that were observed during each measurement period). These recorded traffic data will be used as input to the TNM to determine if, given the topography and site conditions of the area, the computer model re-creates" the measured levels with the existing roadway within an acceptable level of accuracy. For the purpose of the Route 7/Route 15 Interchange analysis, the model will be determined to be valid if measured and computer-predicted traffic noise levels are within three dB(A).

To validate the TNM, KBE proposes to obtain one 15-minute sound level measurement in the morning and one 15-minute measurement in the afternoon at the ten field measurement receptor locations illustrated on Figure 1. These ten locations were selected based on the following criteria:

- Safe access.
- Potential for the location to be impacted by traffic noise.
- Ability to conduct visual traffic counts in vicinity of the location.
- The locations are clear of major obstructions (e.g., buildings and existing noise barriers) between the roadway and receptor.
- Free-flow traffic conditions should exist.
- The locations are acoustically representative of other nearby locations.
- The field measurement receptors are spatially distributed along the project.

Because it is desirable to obtain the measurements at locations where there are no other sources of continuous or loud sounds (e.g., a dog barking), the locations at which the monitoring will be performed may be modified on the day(s) the sound level measurements are obtained.

Appendix A provides an example Noise Measurement Data Sheet.

5. Traffic Data

The TNM-predicted existing and future traffic noise levels should produce "worst case" traffic noise conditions. For this purpose, the posted speed limit for each roadway and either each roadway's hour level-of-service (LOS) "C" volume or the peak hour demand volume, if a roadway is forecast to operate at LOS A or B, will be used.

6. Elevation Data

The following sources of elevational data may be used in developing the TNM input:

- As built plans for the existing roadway
- United States Geological Survey (USGS) quadrangle maps
- For receptor points, project specific survey data (i.e., spot elevations)
- Cross sections from roadway design plans
- Digital terrain model (DTM)

7. Receptors

As previously stated, receptors are discrete/representative locations of a noise sensitive land use. Each receptor is defined in the TNM by Cartesian coordinates. For the purpose of determining if a land is impacted by highway traffic noise, receptors will be placed at the edge of the closest noise sensitive area to the roadway. If a property is determined to be impacted by traffic noise and prior to evaluating abatement measures, additional receptors will be input to the TNM to identify the entire area of traffic noise impact.

For single-story residence/facilities, the height of receptors from ground level will be 5 feet. Unless more accurate data are available, 10 feet will be added to model second and subsequent floors of buildings.

A preliminary review of the project study area indicates that the following land uses, for which there are Noise Abatement Criteria, have the potential to be impacted by traffic noise with the improvements to the Route 7/Route 15 Interchange:

- Activity Category B – Residential (single and multi-family residences)
- Activity Category C – Briggs High School, Parkway Christian Academy, Connecticut Korean Mission Church, Parkway Assembly of God, Honeywell Ball Fields, Silvermine Golf Club, Riverside Cemetery.
- Activity Category E – Extended Stay America, Courtyard, Hilton Golden Inn, Hotel Zero Degrees, McDonald's (outdoor seating area).

As previously stated, if there are no exterior areas of frequent use at the places of worship or the school, these properties will be evaluated as Activity Category D uses (i.e., interior traffic noise levels will be predicted). Figure 2 illustrates the locations of the receptors for which existing and future traffic noise levels will be predicted.

8. Noise Barriers

In the consideration of noise barriers as an abatement measure, the goal will be to identify the most optimal barrier (length and height combination) without regard to aesthetics or property parcel lines (i.e., barriers will not be extended such that they end at a property line unless doing so increases the sound level reduction (i.e., insertion loss).

For each barrier for which a cost reasonable height/length is identified, the following additional feasibility/ reasonableness factors will be considered:

- Terrain changes
- Conflicts with utilities
- Safety
- Maintenance
- Drainage requirements
- Right-of-way (ROW) requirements

Three types of noise barriers will be evaluated:

- ROW barriers (on or within the CTDOT ROW) – ROW barriers will be evaluated at heights ranging from 8 to 22 feet in 2 foot increments.
- Structure barriers – Structure barriers (barriers on bridges or retaining walls) will be evaluated at a maximum height of 8 feet.
- Shoulder barriers - Shoulder barriers will be evaluated at heights ranging from 8 to 14 feet in 2 foot increments in areas where traffic railing would be installed with the project improvements.

If noise barriers are evaluated, the results of the analysis will be presented in the project's Noise Study Report (NSR) following the example provided by CTDOT (a Noise Study Report for improvements to Interstate 91 and Route 15 dated June 2016).

Appendix A

Noise Measurement Data Sheet

NOISE MEASUREMENT DATA SHEET

Measurements Taken By: _____ Date: _____
Time Study Started: _____ Time Study Ended: _____
Project Identification:
Federal Project Number: _____
Project Location: _____
_____
_____
Site Identification: Site 1 / Run 1
_____
_____
_____

Weather Conditions:
Sky: Clear ____ Partly Cloudy ____ Cloudy ____ Other _____
Temperature _____F Wind Speed ___ mph Wind Direction ___ Humidity ____
Equipment:
Sound Level Meter:
Type: _____ Serial Number: _____

Calibration Reading:	Start ____	End ____	
Response Settings:	Fast ____	Slow X	
Weighting:	A X	Other ____	

Calibrator:
Type: _____ Serial Number: _____

TRAFFIC DATA

Roadway Identification (Direction)				
	Roadway 1		**Roadway 2**	
Vehicle Type	**Volume**	**Speed (mph)**	**Volume**	**Speed (mph)**
Autos				
Medium Trucks				
Heavy Trucks				
Buses				
Motorcycles				
Duration	10 minutes		10 minutes	

RESULTS [dB(A)]

LEQ _____ LMAX _____

Background Noise: _____
Major Sources: _____
Unusual Events: _____

Attachment B - TNM Validation

Note: The sound level measurements for the validation of TNM were performed in December of 2016.

Calibration Certificate

Certificate Number 2016000151

Customer:
KB Environmental Sciences
9500 Koger Boulevard Suite 211
St Petersburg, FL 33702, United States

Model Number	CAL200	***Procedure Number***	D0001.8386
Serial Number	5592	***Technician***	Scott Montgomery
Test Results	**Pass**	***Calibration Date***	6 Jan 2016
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	6 Jan 2018
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	26 °C ± 0.3 °C
		Humidity	32 %RH ± 3 %RH
		Static Pressure	101.2 kPa ± 1 kPa

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

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2003 ANSI S1.40-2006

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

The quality system is registered to ISO 9001:2008.

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

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

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	09/04/2015	09/04/2016	001021
Sound Level Meter / Real Time Analyzer	04/07/2015	04/07/2016	001051
Microphone Calibration System	08/20/2015	08/20/2016	005446
1/2" Preamplifier	10/09/2015	10/09/2016	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/20/2015	08/20/2016	006507
1/2 inch Microphone - RI - 200V	02/26/2015	02/26/2016	006510
Pressure Transducer	05/07/2015	05/07/2016	007310

Certificate Number 2016000151

Output Level

Nominal Level [dB]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
94	101.2	94.01	93.80	94.20	0.14	Pass
114	100.9	114.01	113.80	114.20	0.13	Pass

-- End of measurement results--

Frequency

Nominal Level [dB]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
94	101.2	1,000.13	990.00	1,010.00	0.20	Pass
114	100.9	1,000.13	990.00	1,010.00	0.20	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N)

Nominal Level [dB]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
94	101.2	0.39	0.00	2.00	0.25	Pass
114	100.9	0.32	0.00	2.00	0.25	Pass

-- End of measurement results--

Level Change Over Pressure

Tested at: 114 dB, 26 °C, 34 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
101.3	101.3	0.00	-0.30	0.30	0.04	Pass
108.0	108.2	-0.04	-0.30	0.30	0.04	Pass
92.0	92.1	0.03	-0.30	0.30	0.04	Pass
83.0	83.1	0.04	-0.30	0.30	0.04	Pass
74.0	74.0	-0.01	-0.30	0.30	0.04	Pass
65.0	65.1	-0.13	-0.30	0.30	0.04	Pass

-- End of measurement results--

Frequency Change Over Pressure

Tested at: 114 dB, 26 °C, 34 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	108.2	0.00	-10.00	10.00	0.20	Pass
101.3	101.3	0.00	-10.00	10.00	0.20	Pass
92.0	92.1	0.00	-10.00	10.00	0.20	Pass
83.0	83.1	-0.01	-10.00	10.00	0.20	Pass
74.0	74.0	-0.01	-10.00	10.00	0.20	Pass
65.0	65.1	0.00	-10.00	10.00	0.20	Pass

-- End of measurement results--

Certificate Number 2016000151

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

Tested at: 114 dB, 26 °C, 34 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.2	0.32	0.00	2.00	0.25	Pass
101.3	101.3	0.32	0.00	2.00	0.25	Pass
92.0	92.1	0.29	0.00	2.00	0.25	Pass
83.0	83.1	0.28	0.00	2.00	0.25	Pass
74.0	74.0	0.27	0.00	2.00	0.25	Pass
65.0	65.1	0.26	0.00	2.00	0.25	Pass

-- End of measurement results--

Signatory: Scott Montgomery

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ilac-MRA ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

1/6/2016 12:06:54PM

Calibration Certificate

Certificate Number 2016006845

Customer:
KB Environmental Sciences
9500 Koger Boulevard Suite 211
St Petersburg, FL 33702, United States

Model Number	831	***Procedure Number***	D0001.8384
Serial Number	0001285	***Technician***	Ron Harris
Test Results	**Pass**	***Calibration Date***	29 Jul 2016
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	29 Jul 2018
Description	Larson Davis Model 831	***Temperature***	23.32 °C ± 0.01 °C
		Humidity	51.2 %RH ± 0.5 %RH
		Static Pressure	86.28 kPa ± 0.03 kPa

Evaluation Method ***Tested with:***
PRM831. S/N 0431
377B20. S/N 109759

Data reported in dB re 20 µPa.

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

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

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

The quality system is registered to ISO 9001:2008.

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

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

Standards Used

Description	Cal Date	Cal Due	Cal Standard
SRS DS360 Ultra Low Distortion Generator	06/21/2016	06/21/2017	006311
Hart Scientific 2626-S Humidity/Temperature Sensor	06/17/2016	06/17/2017	006946
Larson Davis CAL200 Acoustic Calibrator	07/26/2016	07/26/2017	007027
Larson Davis Model 831	03/01/2016	03/01/2017	007182
1/2 inch Microphone - P - 0V	03/07/2016	03/07/2017	007185
Larson Davis CAL291 Residual Intensity Calibrator	09/24/2015	09/24/2016	007287

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Certificate Number 2016006845

Acoustic Calibration

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

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz					
As Received Level: 114.06 Adjusted Level: 114.01					

-- End of measurement results--

Acoustic Signal Tests, C-weighting

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

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.16	-0.20	-1.20	0.80	0.21	Pass
1000	-0.12	0.00	-0.70	0.70	0.21	Pass
8000	-1.59	-3.00	-5.50	-1.50	0.21	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
Low Range, 20 dB gain	64.16

-- End of measurement results--

-- End of Report--

Signatory: *Ron Harris*

Calibration Certificate

Certificate Number 2016006844

Customer:
KB Environmental Sciences
9500 Koger Boulevard Suite 211
St Petersburg, FL 33702, United States

Model Number	LxT2	***Procedure Number***	D0001.8384	
Serial Number	0001843	***Technician***	Ron Harris	
Test Results	**Pass**	***Calibration Date***	29 Jul 2016	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	29 Jul 2018	
Description	SoundTrack LxT Class 2	***Temperature***	23.21 °C	± 0.01 °C
		Humidity	50.1 %RH	± 0.5 %RH
		Static Pressure	86.3 kPa	± 0.03 kPa

Evaluation Method ***Tested with:***
PRMLxT2L. S/N 0134
375A02. S/N 010122

Data reported in dB re 20 µPa.

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

IEC 60651:2001 Type 2	ANSI S1.4-2014 Class 2
IEC 60804:2000 Type 2	ANSI S1.4 (R2006) Type 2
IEC 61252:2002	ANSI S1.11 (R2009) Class 2
IEC 61260:2001 Class 2	ANSI S1.25 (R2007)
IEC 61672:2013 Class 2	ANSI S1.43 (R2007) Type 2

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

The quality system is registered to ISO 9001:2008.

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

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

Standards Used

Description	Cal Date	Cal Due	Cal Standard
SRS DS360 Ultra Low Distortion Generator	06/21/2016	06/21/2017	006311
Hart Scientific 2626-S Humidity/Temperature Sensor	06/17/2016	06/17/2017	006946
Larson Davis CAL200 Acoustic Calibrator	07/26/2016	07/26/2017	007027
Larson Davis Model 831	03/01/2016	03/01/2017	007182
1/2 inch Microphone - P - 0V	03/07/2016	03/07/2017	007185
Larson Davis CAL291 Residual Intensity Calibrator	09/24/2015	09/24/2016	007287

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Certificate Number 2016006844

Acoustic Calibration

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

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz					
As Received Level: 114.18 Adjusted Level: 114.02					

-- End of measurement results--

Acoustic Signal Tests, C-weighting

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

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.26	-0.20	-1.70	1.30	0.21	Pass
1000	0.08	0.00	-1.00	1.00	0.21	Pass
8000	-3.86	-3.00	-8.00	2.00	0.21	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
Low Range, 20 dB gain	64.26

-- End of measurement results--

-- End of Report--

Signatory: *Ron Harris*

Vehicle Count Log

Date:

Roadway & Direction:

Site #	Time	Cars	MT	HT	Bus	MC
1 WB 12-2-16		(cars entering from ramp)				
Totals →		644	0	0	0	0
5 SB 12-1-16	10:00 AM – 10:15AM					
Totals→		319	16	3	1	0
6 SB 12-1-16	10:38AM – 10:53AM					
Totals →		311	14	4	0	0
6 SB 12-4-16	12:33- 12:48					
Totals →		305	0	0	1	0
8 EB 12-1-16	11:30AM – 11:45AM					
Totals →		439	0	0	0	0
8 EB 12-4-16	2:11 – 2:26 PM					
Totals →		517	1	0	0	0

KB Environmental Sciences

Vehicle Count Log

Date:

Roadway & Direction:

Site #	Time	Cars	MT	HT	Bus	MC
9 WB 12-4-16	10:53-11:08					
Totals →		467	1	0	0	0
9 WB 12-1-16	12:31 – 12:52					
Totals→		515	0	0	0	0
10 WB 12-1-16	10:14-10:29					
Totals →		483	0	0	0	0
12 SB 12-4-16	9:32-9:47		(entering)			
Totals →		145	3	1	0	1
13 NB 12-3-16	1:04					
Totals →		378	2	0	0	0
14 NB 12-3-16	12:30 – 12:45					
Totals →		371	3	0	0	0

KB Environmental Sciences

Vehicle Count Log

Date:

Roadway & Direction:

Site #	Time	Cars	MT	HT	Bus	MC
15 NB 12-3-16	10:45AM - 11:00	(cars exiting on ramp) * did not need ramp count				
Totals →		349	4	0	0	0
16 NB 12-3-16	2:02 - 2:17					
Totals→		349	5	0	0	0
17 NB 12-3-16	11:50 12:05					
Totals →		387	5	0	0	0
18 SB 12-3-16	9-9:15	(entering thru ramp)				
Totals →		133	1	0	0	0
19 AM WB 12-4-16	10:06 - 10-21	(entering)				
Totals →		445	0	0	1	0
19 PM WB 12-2-16		(cars entering from ramp)				
Totals →		733	1	0	0	0

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Vehicle Count Log

Date:

Roadway & Direction:

Site #	Time	Cars	MT	HT	Bus	MC
1 EB 12-2-16		146				
Totals →		831	1	—	—	—
5 SB 12-1-16	10-10:15	20				
Totals→		288	11	5	1	0
6 NB 12-1-16	10:38 10:53					
Totals →		258	8	3	1	—
6 NB 12-4-16						
Totals →		312	2	0	0	2
8 WB 12-1-16	11:30 11:45	34 Exit				
Totals →		541	1	—	—	—
8 EB 12-4-16		[illegible]				
Totals →		596	1	0	0	0

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Vehicle Count Log

Date:

Roadway & Direction:

Site #	Time	Cars	MT	HT	Bus	MC
9 EB 12-4-16						
Totals →		492	2	0	0	2
9 EB 12-1-16	12:37 12:52					
Totals→		498	1	—	—	-
10 EB 12-1-16	10:14 10:29					
Totals →		330	1	—	-	-
12 NB 12-4-16		75 EXITS				
Totals →		225				
13 NB 12-4-16	1:08 1:23					
Totals →		408	4	1	0	0
14 SB 12-3-16	12:30 12:45					
Totals →		422	3	2	0	0

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Vehicle Count Log

Date:

Roadway & Direction:

Site #	Time	Cars	MT	HT	Bus	MC
15 NB 12-3-16		CANNOT SEE ~~EXIT RAMP~~ 11 X3 33				
Totals →		346	6	1	0	0
16 NB 12-3-16						
Totals→		388	8	0	0	0
17 NB 12-3-16	11:56 12:05					
Totals →		108	8	2	0	0
18 SB 12-3-16		4L EXITS				
Totals →		150	2			
19 AM EB 12-4-16		84 EXITS				
Totals →		532	1	0	0	0
19 PM EB 12-2-16		[illegible]			1	1
Totals →		766 (168 EXITS)	0	6	4	1

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Site Log

Date:

Route 7/Route 15

Site #	Time	Met Data	Calibration	Notes (bkgd sources, unusual events, Leq, etc.)
1	1445 – 1514 15 min Run	51 F 52 % calm – 2.5 mph N partly cloudy	start: 114.0 end: 114.1	RT 15 major source, Leaves rustling, birds chirping. Road is elevated, hill to left then declines westbound to at grade. Mic equivalent to 7 studies in S. Hill blocks traffic to the left. Rock walls around property are at grade and all the way to highway. Bookmark #13 RT7_15.016 Leq = 58.2
5	0955 – 1019 15 min run time	56 F 67 % 4 mph N partly cloudy	start 114.1 end 114.0	RT7 major source. Leaves + branches rustling in the wind Bookmark 2 – 96 SEB. Hill 2nd. Birds chirping. Dull hum in distance – can't ID, continues. Dog barking in bkgd. RT7_15.001 Leq = 65.1
6 AM	~~0949~~ 1026 – 1056 15 min run time	55 F 71 % 5 mph N 56 F 59 % 4 mph NW partly cloudy	114.0 start start 114.0 end 113.9	RT7 major source ~~closed~~ due to [illegible] at 9:34. Bookmark 1. RT7 major source. Car idling nearby + empennage, Leaves rustling, Continuous hum in bkgd – can't ID. Birds chirping. RT7-15.002 Leq 66.1
6 PM	1215 – 1251 15 min runtime	46 F 37 % 2.5 mph N clear	start 114.1 stop 114.1	RT7 primary source. Road is generally level near w/ site w/ traffic mostly visible in all directions, Leaves rustling and aircraft flyover in distance. Bookmark #28 RT7_15.030 Leq = 64.6
8 AM	1125 – 1149 15 min run time	61 F 4 mph NW 61 % mostly clear	start 114.0 end 114.0	S-O back for traffic sounds on frontage Rd. Primary source RT 15. Rustling of leaves, Landscaping in bkgd. Horns honking. RT7 15.005 Leq = 65.0
8 PM	1407 – 1430 one ct	46 F 40 % 2 mph clear	start 114.1 stop 113.8	RT 15 Primary source, aircraft flyovers in distance, birds chirping, Low to mid 60's w/o frontage traffic, mid 60's w/ passbys, traffic on frontage Rd, see back for counts, Bookmark # last one See back for RT 15 speeds RT1_15.032 Leq = 63.2

Site Log

Date:

Route 7/Route 15

Site #	Time	Met Data	Calibration	Notes (bkgd sources, unusual events, Leq, etc.)
9 AM	1045 – 1131 15 min runtime	43 F 46 % 2 mph N clear	start 114.1 stop 113.8	RT15 primary source than passbys on frontage rd, Creeping Hemlock Dr, leaves rustling, and birds chirping Spent time talking w Jules, one of the property owners See back for frontage counts. Bookmark # 27 RT7_15.029 Leq = 67.2
9 PM	1214-1254 15 min run time	57F 45% 2mph W partly cloudy	start 113.9 stop 114.0	~~Entrepreneur back from a cut in residue~~ moved to 69 Creeping Hemlock Dr. More level w/road. See back for frontage Rd counts. Rustling of leaves. RT 15 primary noise than frontage Rd. Honking when resident left. Shielding to left from cut/berm RT7_15.004 Leq = 69.2
10	1009 – 1032 15 min run time	49F 55% 2mph N-NW cloud	start 113.9 end 114.0	RT 15 major source. Aircraft flyovers, birds & squirrels chirping, leaves rustling, can't see traffic due to vegand es road goes down hill toward RT 7. Road goes downhill east to west. Site level w/ road. Short wall on barrier north of site. Bookmark #8 RT7_15.010 Leq = 63.0
12	0923 – 0950 15 min Runtime	46 F 48 % 2 mph N clear	start 114.1 stop 113.9	RT7 primary noise, train horn in bkgrd, birds chirping, passbys on Pearl St (sporadic) Roadway elevated, can only see nearest lane of traffic then disappears behind cut as approaches interchange. Traffic low-high 50s, passbys about 60. Bookmark #24 RT7_15.026 Leq = 55.8 No good spot for shrubs
13	1307 – 1335 15 min Run	47 F 50 %. 2 mph N mostly cloudy	start 114.1 stop 114.0	RT 7 primary source, leaves rustling, birds chirping N. end obscuration wall. Passby on Davis St. Site + road appears level. Panels appear to be 2x6. Counted 25, 26, and 29 moving to north end. End Bookmark # 21 appears to drop below road so is RT7_15.023 Leq = 64.5 taller but eff. bt might be the same.
14	1227 – 1259 15 min run	47 F 44% 2.5 mph N mostly cloudy	start 114.0 stop 114.0	RT7 primary noise. Leaves rustling, birds chirping, aircraft flyover. Behind wooden noise barrier. South end #19 2x4=33; 27. South end of barrier. #19 front counts Bookmark #18 RT7_15.022 Leq = 56.9 #20 concrete wood RT7

KB Environmental Sciences

Site Log

Date:

Route 7/Route 15

Site #	Time	Met Data	Calibration	Notes (bkgd sources, unusual events, Leq, etc.)
15	1041 – 1110 15 min Run time	49 F 40 % 2 mph N partly cloudy	start 114.1 stop 113.9	Moved from Nutmeg to Lakeview Dr due to substation shielding. RT7 major source, Leaves rustling, birds chirping. Helicopter fly over about 5.5 min in. Roadway elevated, can't see NB lanes. Aircraft flyover about 8.25 in. Hummering in distance Background #16 flyovers ↑ sound by ~ 10dB, People talkin RT7_15.020 Leq = 57.2 in bkgd.
16	1400 – 1426 15 min Run	50 F 48 % 2.5 mph N overcast	start 114.1 stop 113.9	RT7 primary source, Traffic on nearby Broad st, leaves, birds. See 5 min count on Broad st below. Raking leaves next door. Santa leave at 8:20 in after driving in at the start, Bookmark # 22 Hummering a lot minimal. Mallard Rd. RT7_15.024 Leq = 61.5 Train horn in bkgd.
17	out and back in 15 hrs 1148 – 1216 Lakeview Dr 15 min run	49 F 49 % 1 mph N mostly cloudy	start 114.0 end 114.0	RT7 primary source. Leaves rustling, possibly on Riverview Dr. Roadway is slightly elevated w/ a slight slope down from N to S. Helo flyover, birds chirping. Police behind traffic cam vehicle. ↓ last min. (>70 dB) Bookmark # 17 RT7_15.021 Leq = 60.0
18	0850 – 0918 15 min Run time	47 F 40 % 2 mph N clear	start 114.1 stop 113.9	RT7 primary source, leaves rustling, birds chirping. Site is on road to south but road enters cut as approaches interchange and can't see traffic. Aircraft flyovers in distance, guess on sheet. Paused to allow Bookmark # 23? Resident to leave driveway. Traffic in low 50s, birds peaking up to 60. RT7_15.025 Leq = 51.6 No road sign behind
19 AM	0955 – 1025 15 min run time	41 F 48 % 2 mph N clear	start 114.0 stop 114.1	RT 15 primary source, birds chirping, leaves rustling Site is on incline downward to road, full view of both directions and in both directions (180°) Bookmark # 25 .328 – near next door on top of hill Bookmark # 26 RT7_15.027 Leq = 65.5
19 PM	1358 – 1425 15 min Run	51 F 52 % 6 mph NW cloudy	start: 114.0 stop: 113.9	Empty lot. Adjacent prop owner not home. RT 15 major sources. Leaves rustling, aircraft flyovers. Above the roadway, about midway down an incline from Rae Ln to RT 15. Bookmark # 12 RT7_15.015 Leq = 67.3

23 Rae Ln

Table B-1. Summary of Sound Level Measurement Data

Noise Study Area	Receptor[1]	Date	Measurement Period Start Time	Direction of Travel	Vehicle Count and Average Speed[2]					Measured Sound Level (Leq(h) Expressed as dB(A))
					Auto	MT	HT	Bus	MC	
1	1	12-2-16	2:45	WB	644/56	--	--	--	--	58.2
				EB	881/56	1	--	--	--	
				EB Exit	146/30	--	--	--	--	
				WB Entrance	75/40	--	--	--	--	
2	5	12-1-16	10:00	SB	319/58	16/60	3/54	1/61	--	63.1
				NB	288/58	11/60	5/54	1/61	--	
	6	12-1-16	10:38	SB	311/58	14/60	4/54	--	--	66.1
				NB	258/58	8/60-	3/54	1/61	--	
		12-4-16	12:33	SB	305/56	--	--	1/56	--	64.6
				NB	312/56	2/56	--	--	--	
	8	12-1-16	11:30	EB	439/58	--	--	--	--	65.0
				WB	541/58	1/60	--	--	--	
		12-4-16	2:11	EB	517/62	1/62	--	--	--	63.2
				WB	586/62	1/62				
	9	12-4-16	10:53	WB	467/64	1/64	--	--	--	67.2
				EB	492/64	2/64	--	--	2/64	
				Creeping Hemlock Dr	12/30	--	--	--	--	
		12-1-16	12:37	WB	515/65	--	--	--	--	69.1
				EB	498/65	1/400	--	--	--	
				Creeping Hemlock Dr	12/30	1/30	--	--	--	
3	10	12-1-16	10:14	WB	483/63	--	--	--	--	63.0
				EB	330/63	1/63	--	--	--	

Noise Study Area	Receptor[1]	Date	Measurement Period Start Time	Direction of Travel	Vehicle Count and Average Speed[2]					Measured Sound Level (Leq(h) Expressed as dB(A))
					Auto	MT	HT	Bus	MC	
	12	12-4-16	9:32	NB	225/58	--	--	--	--	55.8
				SB	145/67	3/67	1/67	--	1/67	
				SB Entrance	88/3--	--	--	--	--	
				NB Exit	75/25	--	--	--	--	
	13	12-3-16	1:08	NB	378/56	2/56	--	--	--	64.5
				SB	408/56	4/56	1/56	--	--	
				On Ramp	181/55	3/55	--	--	--	
	14	12-3-16	12:30	NB 3-Lane	377/59	3/58	--	--	--	56.9
				SB 2-Lane	422/59	3/58	2/53	--	--	
				On Ramp	181/55	3/55	--	--	--	
4	15	12-3-16	10:45	NB	349/60	4/60	--	--	--	55.8
				SB	346/63	--	1/63	--	--	
				SB Exit	33/55	--	--	--	--	
				NB Exit	181/55	--	--	--	--	
	16	12-3-16	2:02	NB	349/58	5/58	--	--	--	61.5
				SB	388/58	8/58	--	--	--	
				Broad St	25/25	1/25	--	--	5/25	
	17	12-3-16	11:50	NB	387/59	5/64	--	--	--	60.0
				SB	408/59	8/64	2/64	--	--	
	18	12-3-16	9:00	NB	159/58	2/58	--	--	--	51.6
				SB	133/67	1/67	--	--	--	
				SB Entrance	45/3--	--	--	--	--	
				NB Exit	44/25	--	--	--	--	
	19	12-4-16	10:06	WB	445/56	--	--	1/56	--	67.3
				EB	532/56	1/56	--	--	--	

Noise Study Area	Receptor[1]	Date	Measurement Period Start Time	Direction of Travel	Vehicle Count and Average Speed[2]					Measured Sound Level (Leq(h) Expressed as dB(A))
					Auto	MT	HT	Bus	MC	
				EB Exit	84/3--	--	--	--	--	
				WB Entrance	48/4--	--	--	--	--	
		12-2-16	2:22	WB	733/56	1/56	--	--	--	65.5
				EB	766/56	--	--	4/56	1/56	
				EB Exit	168/3--	--	--	--	--	
				WB Entrance	66/4--	--	--	--	--	

Notes:

[1] Sound level measurements were not obtained at Receptor R7 or R11 because these receptors were added to the study after the measurements were performed.

[2] Hourly volumes in TNM were derived by extrapolation of counts taken during measurement period to one-hour values.

mph = Miles per hour Leq(h) = Hourly Equivalent Sound Level dB(A) = Decibels on the A-weighted scale

Table B-2. TNM Validation Results

NSA	Receptor Number[1]		Measured[2]	Modeled	Difference
1	1		58.2	56.7	1.5
2	5		63.1	62.6	0.5
	6	AM	66.1	63.6	2.5
		PM	64.6	62.6	2.0
	8	AM	65.0	63.5	1.5
		PM	63.2	64.6	-1.4
	9	AM	67.2	67.1	0.1
		PM	69.1	67.6	1.5
3	10		63.0	60.2	2.8
	12		55.8	55.6	0.2
	13		64.5	61.9	2.6
	14		56.9	54.6	2.3
4	*15*		55.8	53.8	2.0
	16		61.5	58.8	2.7
	17		60.0	57.8	2.2
	18		51.6	50.0	1.6
	19	AM	65.5	63.4	2.1
		PM	67.3	65.3	2.0

[1] Sound level measurements were obtained at certain receptors in both the morning (AM) and afternoon (PM) to determine if there is was a substantial difference in measured levels between the two time periods. Notably, measurements were not obtained at all of the evaluated receptors because the measurements are used to confirm that the computer model can predict existing levels within the tolerance level at any location (i.e., receptor) within the study area.

[2] Measured sound levels include all sources of sound that occur during a measurement period.

TNM = Traffic Noise Model AM = Morning PM = Afternoon

Attachment C – Modeled Traffic Noise Levels

Table C-1. Predicted Traffic Noise: Existing, Design Year No-Build and Build Alternative 21D - AM

NSA	Receptor Number	Land Use	Activity Category	Predicted Highway Traffic Noise ($L_{eq(h)}$ expressed as dB(A))					
					Design Year No Build Alternative		Design Year Build Alternative		
				Modeled Existing	Modeled Future dB(A)	Increase From Existing	Modeled Future dB(A)[2]	Increase from Existing	Increase from No-Build
1	1	Residential (SF)	B	56	57	1	57	1	--
	2	Residential (SF)	B	56	57	1	57	1	--
	3	Residential (SF)	B	53	54	1	54	1	--
	4	Residential (SF)	B	52	53	1	53	1	--
2	5	Residential (MF)	B	64	65	1	65	1	--
	6	Residential (MF)	B	64	65	1	65	1	--
	7	Residential (MF)	B	71	71	--	71	--	--
	8	Residential (SF)	B	65	65	--	65	--	--
	9	Residential (SF)	B	65	65	--	65	--	--
3	10	Residential (SF)	B	61	61	--	61	--	--
	11	Office Building	E	56	56	--	54	-2	-2
	12	Residential (SF)	B	59	59	--	59	--	--
	13	Place of Worship	C	63	63	--	63	--	--
	14	Residential (SF)	B	55	55	--	55	--	--
4	15	Residential (SF)	B	56	56	--	56	--	--
	16	Residential (SF)	B	59	59	--	59	--	--
	17	Residential (SF)	B	59	59	--	59	--	--
	18	Residential (MF)	B	56	56	--	56	--	--
	19	Residential (SF)	B	64	65	1	64	--	-1

[1] Each residential receptor represents one residence.

[2] 23 CFR 772 defines that a traffic noise impact occurs when design year build condition noise levels approach, meet, or exceed the FHWA's NAC (Table 2). Gray shading denotes that the predicted traffic noise level has approached, met, or exceeded the NAC.

NSA = Noise Study Area -- = No change SF = Single family MF = Multi-family

Table C-2. Predicted Traffic Noise: Existing, Design Year No-Build and Build Alternative 21D - PM

NSA	Receptor Number	Land Use	Activity Category	Predicted Highway Traffic Noise ($L_{eq(h)}$ expressed as dB(A))					
					Design Year No Build Alternative		Design Year Build Alternative		
				Modeled Existing	Modeled Future dB(A)	Increase From Existing	Modeled Future dB(A)[2]	Increase from Existing	Increase from No-Build
1	1	Residential (SF)	B	56	57	1	57	1	--
	2	Residential (SF)	B	56	57	1	57	1	--
	3	Residential (SF)	B	53	54	1	54	1	--
	4	Residential (SF)	B	52	52	--	52	--	--
2	5	Residential (MF)	B	64	64	--	64	--	--
	6	Residential (MF)	B	64	64	--	64	--	--
	7	Residential (MF)	B	71	71	--	71	--	--
	8	Residential (SF)	B	65	65	--	65	--	--
	9	Residential (SF)	B	65	65	--	65	--	--
3	10	Residential (SF)	B	61	62	1	62	1	--
	11	Office Building	E	56	58	2	56	--	-2
	12	Residential (SF)	B	58	59	1	59	1	--
	13	Place of Worship	C	63	63	--	63	--	--
	14	Residential (SF)	B	55	55	--	55	--	--
4	15	Residential (SF)	B	56	56	--	56	--	--
	16	Residential (SF)	B	59	59	--	59	--	--
	17	Residential (SF)	B	59	59	--	59	--	--
	18	Residential (MF)	B	56	56	--	56	--	--
	19	Residential (SF)	B	65	65	--	65	--	--

[1] Each residential receptor represents one residence.

[2] 23 CFR 772 defines that a traffic noise impact occurs when design year build condition noise levels approach, meet, or exceed the FHWA's NAC (Table 2). Gray shading denotes that the predicted traffic noise level has approached, met, or exceeded the NAC.

NSA = Noise Study Area -- = No change SF = Single family MF = Multi-family

Table C-3. Predicted Traffic Noise: Existing, Design Year No-Build and Build Alternative 26 - AM

NSA	Receptor Number	Land Use	Activity Category	Predicted Highway Traffic Noise ($L_{eq(h)}$ expressed as dB(A))					
					Design Year No Build Alternative		Design Year Build Alternative		
				Modeled Existing	Modeled Future dB(A)	Increase From Existing	Modeled Future dB(A)[2]	Increase from Existing	Increase from No-Build
1	1	Residential (SF)	B	56	57	1	57	1	--
	2	Residential (SF)	B	56	57	1	57	1	--
	3	Residential (SF)	B	53	54	1	54	--	--
	4	Residential (SF)	B	52	53	1	53	1	--
2	5	Residential (MF)	B	64	65	1	65	1	--
	6	Residential (MF)	B	64	65	1	65	1	--
	7	Residential (MF)	B	71	71	--	71	--	--
	8	Residential (SF)	B	65	65	--	65	--	--
	9	Residential (SF)	B	65	65	--	65	--	--
3	10	Residential (SF)	B	61	61	--	61	--	--
	11	Office Building	E	56	56	--	55	-1	-1
	12	Residential (SF)	B	59	59	--	59	--	--
	13	Place of Worship	C	63	63	--	63	--	--
	14	Residential (SF)	B	55	55	--	55	--	--
4	15	Residential (SF)	B	56	56	--	56	--	--
	16	Residential (SF)	B	59	59	--	59	--	--
	17	Residential (SF)	B	59	59	--	59	--	--
	18	Residential (MF)	B	56	56	--	57	1	1
	19	Residential (SF)	B	64	65	1	65	1	--

[1] Each residential receptor represents one residence.

[2] 23 CFR 772 defines that a traffic noise impact occurs when design year build condition noise levels approach, meet, or exceed the FHWA's NAC (Table 2). Gray shading denotes that the predicted traffic noise level has approached, met, or exceeded the NAC.

NSA = Noise Study Area -- = No change SF = Single family MF = Multi-family

Table C-4. Predicted Traffic Noise: Existing, Design Year No-Build and Build Alternative 26 – PM

NSA	Receptor Number	Land Use	Activity Category	Predicted Highway Traffic Noise ($L_{eq(h)}$ expressed as dB(A))					
					Design Year No Build Alternative		Design Year Build Alternative		
				Modeled Existing	Modeled Future dB(A)	Increase From Existing	Modeled Future dB(A)[2]	Increase from Existing	Increase from No-Build
1	1	Residential (SF)	B	56	57	1	57	1	--
	2	Residential (SF)	B	56	57	1	57	1	--
	3	Residential (SF)	B	53	54	1	54	1	--
	4	Residential (SF)	B	52	52	--	52	--	--
2	5	Residential (MF)	B	64	64	--	64	--	--
	6	Residential (MF)	B	64	64	--	64	--	--
	7	Residential (MF)	B	71	71	--	71	--	--
	8	Residential (SF)	B	65	65	--	65	--	-
	9	Residential (SF)	B	65	65	--	65	--	--
3	10	Residential (SF)	B	61	62	1	62	1	--
	11	Office Building	E	56	58	2	56	--	-2
	12	Residential (SF)	B	58	59	1	59	1	--
	13	Place of Worship	C	63	63	--	63	--	--
	14	Residential (SF)	B	55	55	--	55	--	--
4	15	Residential (SF)	B	56	56	--	56	--	--
	16	Residential (SF)	B	59	59	--	59	--	--
	17	Residential (SF)	B	59	59	--	59	--	--
	18	Residential (MF)	B	56	56	--	57	1	1
	19	Residential (SF)	B	65	65	--	65	--	--

[1] Each residential receptor represents one residence.

[2] 23 CFR 772 defines that a traffic noise impact occurs when design year build condition noise levels approach, meet, or exceed the FHWA's NAC (Table 2). Gray shading denotes that the predicted traffic noise level has approached, met, or exceeded the NAC.

NSA = Noise Study Area -- = No change SF = Single family MF = Multi-family

Attachment D – TNM Traffic Data

Table D-1. Traffic Data

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
Route 7 SB	North of Rt 15 On-ramp	Volume	1370	1460	1690	1810	1620	1650	2030	2020
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
		% HTrucks	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Route 7 SB	South of Rt 15 On-ramp	Volume	2070	2160	2550	2710	2890	2920	2920	2920
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
		% HTrucks	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Route 7 SB	South of New Canaan Ave Off-ramp	Volume	1920	1940	2360	2440	2660	2630	2630	2630
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
		% HTrucks	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Route 7 SB	South of New Canaan Ave On-ramp	Volume	3100	2970	3830	3800	3830	3800	3930	3800
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
		% HTrucks	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
New Canaan Ave		Volume	1950	1850	2420	2410	2120	2220	2120	2220
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	2.5	1.8	2.5	1.8	2.5	1.8	2.5	1.8
		% HTrucks	2.5	1.8	2.5	1.8	2.5	1.8	2.5	1.8
Ramp	Route 15 EB to Route 7 SB On-ramp	Volume	700	700	860	900	1270	1270	860	900
		Speed (mph)	30	30	30	30	25	25	25	25
Ramp		Volume	700	760	820	920	820	920	N/A	N/A

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
	Route 7 NB to Route 15 WB Off-ramp	Speed (mph)	25	25	25	25	25	25	N/A	N/A
Ramp	Route 7 SB to New Canaan Ave Off-ramp	Volume	150	220	190	270	230	290	230	290
		Speed (mph)	45	45	45	45	45	45	45	45
		% MTrucks	2.1	2.1	2.1	2.3	2.1	2.3	2.1	2.3
Ramp	New Canaan Ave to Route7 NB On-ramp	Volume	160	140	210	180	210	180	210	180
		Speed (mph)	25-55	25-55	25-55	25-55	25-55	25-55	25-55	25-55
		% MTrucks	3	31	3	3.1	3	3.1	3	3.1
Ramp	Route 7 NB to New Canaan Ave Off-ramp	Volume	780	990	970	1320	800	1070	800	1070
		Speed (mph)	25	25	25	25	25	25	25	25
		% MTrucks	7	3.2	7	3.2	7	3.2	7	3.2
		% HTrucks	2.1	0.4	2.1	0.4	2.1	0.4	2.1	0.4
		% Buses	1	0.3	1	0.3	1	0.3	1	0.3
Ramp	New Canaan Ave to Route 7 SB On-ramp	Volume	1180	1030	1470	1360	1170	1170	1170	1170
		Speed (mph)	25-55	25-55	25-55	25-55	25-55	25-55	25-55	25-55
		% MTrucks	5.6	4.5	5.6	4.5	5.6	4.5	5.6	4.5
		% HTrucks	1.3	0.8	1.3	0.8	1.3	0.8	1.3	0.8
		% Buses	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Route 7 NB	Between Belden Ave and New Canaan Ave Off-ramp	Volume	3140	3060	3710	3860	3710	3860	3710	3860
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	2.58	1.5	2.58	1.5	2.58	1.5	2.58	1.5
		% HTrucks	2.58	1.5	2.58	1.5	2.58	1.5	2.58	1.5
Route 7 NB	Between New Canaan Ave Off-ramp and On-ramp	Volume	2360	2070	2740	2530	2910	2780	2910	2780
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	2.58	1.5	2.58	1.5	2.58	1.5	2.58	1.5

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
Route 7 NB	North of New Canaan Ave On-ramp	Volume	2520	2210	2950	2710	3120	2960	3120	2960
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
		% HTrucks	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Route 7 NB	North of Route 15 Off-ramp	Volume	1820	1450	2130	1790	2020	1740	3480	3240
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
		% HTrucks	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Ramp	Route 15 EB to Route 7 NB On-ramp	Volume	520	450	640	580	70	50	N/A	N/A
		Speed (mph)	25	25	25	25	25	25	N/A	N/A
Route 7 NB	South of On-ramp	Volume	1820	1450	2130	1790	2660	2320	2730	2370
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
		% HTrucks	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Route 7 NB	North of On-ramp	Volume	2340	1900	2770	2370	2730	2370	2730	2370
		Speed (mph)	55 - 40	55 - 40	55 - 40	55 - 40	55 - 40	55 - 40	55 - 40	55 - 40
		% MTrucks	3.4	1.4	3.4	1.4	3.4	1.4	3.4	1.4
		% HTrucks	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2
Route 7 SB	Between Route 15 and Grist Mill Rd	Volume	1950	2000	2390	2460	2450	2410	2450	2410
		Speed (mph)	55	55	55	55	55	55	55	55
		% MTrucks	3.8	1.7	3.8	1.7	3.8	1.7	3.8	1.7
		% HTrucks	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
Ramp	Route 7 SB to Route 15 WB	Volume	580	540	700	650	1020	1710	1020	1710
		Speed (mph)	40	40	40	40	40	40	40	40
Ramp	Route 15 EB to Route 7 SB	Volume	700	700	860	900	1920	1440	1500	1480
		Speed (mph)	25	25	25	25	25	25	25	25

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
Ramp	New Canaan Ave to Route 15 EB	Volume	530	550	650	660	650	660	650	660
		Speed (mph)	25	25	25	25	25	25	25	25
Ramp	Route 15 EB to Route 7 SB	Volume	2780	3200	3200	3710	2140	3170	2560	3130
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 EB	West of Route 7 SB Off-ramp	Volume	3480	3900	4060	4610	4060	4610	4060	4610
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	East of Route 7 SB On-ramp	Volume	3300	3180	3800	3720	3480	2660	3480	2660
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	West of Route 7 SB On-ramp	Volume	3880	3720	4500	4370	4500	4370	4500	4370
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 EB	West of New Canaan Ave On-ramp	Volume	3150	3750	3410	3950	3410	3950	3410	3950
		Speed (mph)	55	55	55	55	55	55	55	55
Ramp	Main Ave to Route 15 WB	Volume	160	470	200	580	N/A	N/A	N/A	N/A
		Speed (mph)	25	25	25	25	N/A	N/A	N/A	N/A
Ramp	Creeping Hemlock Dr to Route 15 WB	Volume	150	240	180	320	N/A	N/A	N/A	N/A
		Speed (mph)	25	25	25	25	N/A	N/A	N/A	N/A
Ramp	Route 15 WB to Main Ave	Volume	730	200	830	280	990	430	990	430
		Speed (mph)	25	25	25	25	25	25	25	25
Ramp	Main Ave Exit to Creeping Hemlock EB	Volume	720	150	820	230	980	380	980	380
		Speed (mph)	25	25	25	25	25	25	25	25
Ramp	Mail Ave Exit to Creeping Hemlock WB	Volume	930	240	1070	330	1250	500	1250	500
		Speed (mph)	25	25	25	25	25	25	25	25
Creeping Hemlock Dr		Volume	270	410	320	450	320	450	320	450

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		% HTrucks	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Route 15 EB	West of Main Ave SB Off-ramp	Volume	2260	2750	2560	3130	1500	2590	1500	2590
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 EB	East of Main Ave SB Off-ramp	Volume	2030	2470	2290	2770	1500	2590	1500	2590
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 EB	Over Bridge	Volume	2140	2820	1500	2590	1500	2590	1500	2590
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 EB	West of Main Ave NB On-ramp	Volume	1440	2820	1670	3040	1500	2590	1500	2590
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 EB	East of Main Ave NB On-ramp	Volume	1700	3180	2000	3750	2000	3750	2000	3750
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	East of Main Ave Off-ramp	Volume	3540	2000	4060	2430	4060	2430	4060	2430
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	Between Main Ave Off-ramp and On-ramp	Volume	2810	1800	3230	2150	3070	2000	3070	2000
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	Over Bridge	Volume	2960	2040	3410	2470	2660	1740	2660	1740
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	East of Main Ave SB On-ramp	Volume	2480	1770	2840	2060	2660	1740	2660	1740
		Speed (mph)	55	55	55	55	55	55	55	55
Route 15 WB	West of Main Ave SB On-ramp	Volume	2600	2420	2980	2800	2660	1740	2660	1740
		Speed (mph)	55	55	55	55	55	55	55	55
Main St	South of Route 15 SB	Volume	930	1590	1140	1900	800	1690	800	1690
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	1.15	1.6	1.15	1.15	1.15	1.15	1.15	1.15

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
		% HTrucks	1.15	0.8	1.15	1.15	1.15	1.15	1.15	1.15
Main St	South of Route 15 NB	Volume	1010	960	1130	1290	960	1040	960	1040
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	1.55	0.65	1.55	1.55	1.55	1.55	1.55	1.55
		% HTrucks	1.55	0.65	1.55	1.55	1.55	1.55	1.55	1.55
Main St	Between Route 15 and Glover Ave SB	Volume	1160	1470	1370	1800	1070	1520	1070	1520
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	2.25	1.3	2.25	2.25	2.25	2.25	2.25	2.25
		% HTrucks	2.25	1.3	2.25	2.25	2.25	2.25	2.25	2.25
Main St	Between Route 15 and Glover Ave NB	Volume	1280	1110	1420	1440	1530	1210	1530	1210
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	2	0.7	2	2	2	2	2	2
		% HTrucks	2	0.7	2	2	2	2	2	2
Main St	North of Glover SB	Volume	400	1480	470	1660	350	1630	350	1630
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	2.8	0.75	2.8	2.8	2.8	2.8	2.8	2.8
		% HTrucks	2.8	0.75	2.8	2.8	2.8	2.8	2.8	2.8
Main St	North of Glover NB	Volume	1470	460	1620	510	1580	450	1580	450
		Speed (mph)	30	30	30	30	30	30	30	30
		% MTrucks	0.85	0.45	0.85	0.85	0.85	0.85	0.85	0.85
		% HTrucks	0.85	0.45	0.85	0.85	0.85	0.85	0.85	0.85
Ramp	Ramp B West of Ramp C	Volume	N/A	N/A	N/A	N/A	410	410	N/A	N/A
		Speed (mph)	N/A	N/A	N/A	N/A	25	25	N/A	N/A
		% MTrucks	N/A	N/A	N/A	N/A	1	1	N/A	N/A
		% HTrucks	N/A	N/A	N/A	N/A	1	1	N/A	N/A
Ramp		Volume	N/A	N/A	N/A	N/A	1470	950	N/A	N/A

Roadway/Direction of Travel	Segment	Factor	Existing		No Build		Alternative 21D		Alternative 26	
			AM	PM	AM	PM	AM	PM	AM	PM
	Ramp B East of Ramp C to Main Ave	Speed (mph)	N/A	N/A	N/A	N/A	25	25	N/A	N/A
		% MTrucks	N/A	N/A	N/A	N/A	1	1	N/A	N/A
		% HTrucks	N/A	N/A	N/A	N/A	1	1	N/A	N/A
Ramp	From Main Ave to Ramp WS	Volume	N/A	N/A	N/A	N/A	390	1220	390	1220
		Speed (mph)	N/A	N/A	N/A	N/A	25	25	25	25
		% MTrucks	N/A	N/A	N/A	N/A	1	1	1	1
		% HTrucks	N/A	N/A	N/A	N/A	1	1	1	1
Ramp	Collects Ramp D and Route 15 WB Exit	Volume	N/A	N/A	N/A	N/A	800	1460	800	1480
		Speed (mph)	N/A	N/A	N/A	N/A	25	25	25	25
		% MTrucks	N/A	N/A	N/A	N/A	1	1	1	1
		% HTrucks	N/A	N/A	N/A	N/A	1	1	1	1
Ramp	Ramp SE west of Ramp C	Volume	N/A	N/A	N/A	N/A	N/A	N/A	1470	950
		Speed (mph)	N/A	N/A	N/A	N/A	N/A	N/A	25	25
		% MTrucks	N/A	N/A	N/A	N/A	N/A	N/A	1	1
		% HTrucks	N/A	N/A	N/A	N/A	N/A	N/A	1	1
Ramp	Ramp Connecting Ramp SE to Route 15 EB (Alt 21D) or Route 15 EB Exit to Ramp B (Alt 26)	Volume	N/A	N/A	N/A	N/A	N/A	N/A	1340	720
		Speed (mph)	N/A	N/A	N/A	N/A	N/A	N/A	25	25
		% MTrucks	N/A	N/A	N/A	N/A	N/A	N/A	1	1
		% HTrucks	N/A	N/A	N/A	N/A	N/A	N/A	1	1

mph = miles per hour % = Percent AM = Morning PM = Afternoon MTrucks = Medium trucks HTrucks = Heavy trucks N/A = not applicable

Attachment E – Public Traffic Noise-Related Comments

Route 7-15 Norwalk

Route 7 - 15 Interchange
State Proj. No. 102-358

Subject: Silvermine Homeowners 2
Date/Time: October 17, 2016 07:00 PM
Location: Norwalk City Hall

Attendees:

First Name	Last Name	Email	Company	Attended
Richard	Armstrong	Richard.Armstrong@ct.gov	CTDOT	Yes
John	Eberle	John.Eberle@stantec.com	Stantec	Yes
Andy	Fesenmeyer	andy.fesenmeyer@ct.gov	CTDOT	Yes
Ken	Livingston	klivingston@fhiplan.com	Fitzgerald & Halliday, Inc.	Yes
Gary	Sorge	gary.sorge@stantec.com	Stantec Consulting Services Inc.	Yes
Jennifer	Sweeney	Jennifer.Sweeney@ct.gov	CTDOT	Yes
Stacey	Vairo	svairo@ahs-inc.biz	Archaeological and Historical Services, Inc.	Yes

Meeting Items

2.1

Topic: PROJECT MANAGEMENT/MEETINGS/PUBLIC OUTREACH **Status:**
Open

Discussion:

Discussion Items
• Rich Armstrong, John Eberle and Ken Livingston presented an overview of the project and where things are headed. Following the presentation, a Q & A period occurred.

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The following questions were asked:

Q: Why can't we start with 21C now and being construction?

A:Need to start NEPA/CEPA process anew. We will use to the fullest extent possible prior documentation but will need to update many topical areas and will also need to consider potential new design alternatives.

Comment: Last involvement with CTDOT was not very good, concern with review and evaluation of Silvermine River Bridge. CTDOT and consultants need to be in field and review conditions.

Q: Does this project involve re-alignment of Route 7 and CT DMV location?

A: This project is narrowly defined to focus on improve connections between Route 7 and the Merritt Parkway. There may be other projects looking at different locations, but our focus and evaluation will be on the connections between Route 7 and 15.

Q: Is this an isolated project or an expansion of Route 7 highway?

A: This project is narrowly defined to focus on improve connections between Route 7 and the Merritt Parkway. There may be other projects looking at different locations, but our focus and evaluation will be on the connections between Route 7 and 15.

Q: Does this involved or are their plans for expansion of the Merritt Parkway?

A: This project is not focused on and will not consider expansion of Merritt Parkway.

Q: What is cost to construct?

A: Initial estimates are between $150 and 200 million.

Q: Is Route 7 and Grist Mill Road part of this project?

A: The DOT is conducting a separate project to evaluate improvements at that location. We are aware of that project and will include any proposed changes into our project evaluation.

Q: Will the past alternatives be available to review?

A: The project website provides links to past project documents and presentations, including the full set

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of alternatives considered.
Q: Why didn't the State purchase the property that is now an apartment building and does that prohibit the 21C alternative. **A:** The State could not purchase the property as there was no active project at the time. The new apartment building will require modifications to the 21C alternative but does not prohibit it.
Q: Where will construction staging areas be located? **A:** The location and temporary impacts of construction staging will be identified and considered during the environmental documentation process. We are just beginning the study and specific locations will depend on a range of factors including the alternatives developed.
Q: Will the Merritt Parkway multi-use trail be integrated into this project? **A:** The multi-use pathway under consideration along the Merritt Parkway will not be part of this project, but we will work to ensure any alternative does not prohibit this pathway.The project will include the Norwalk River Valley Trail within the project.
Q: How realistic is the 2021 construction date? **A:** That is the goal, it will dependent on funding availability, agreement on preferred alternative and moving through environmental review process.
Comment: Please be aware of the 720 apartment units proposed for Glover Avenue and the potential for new "big box" development on Main Avenue.
Q: Has the Merritt Parkway Conservancy (MPC) been involved with the project? **A:** The project team as met with MPC and they will be represented on the Advisory Committee.
Q: Will you meet with the Norwalk Preservation Trust? **A:** Yes, we are interested in meeting with all organizations that would like to have the project team.
Comment: Please ensure there is a budget of landscaping and proper landscaping is completed for the project.
Q: Will there be evaluation of noise?

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October 17, 2016
Silvermine Homeowners 2

A: A detailed noise study will be a component of the environmental documentation. The noise analysis is very programmatic and will identify potential locations for noise barriers or other treatments to mitigate noise.
Q: Will you look at truck issues on the Merritt Parkway (specifically to deter or prevent trucks from accessing the Parkway then needing to back down and impact traffic on Main Ave,)? **A:** We will look further into the issue.
Q: What are next steps to stay involved with the project? **A:** We encourage people to visit the project website, follow us on social media and sign-up for our mailing list. We will have multiple opportunities for the public to be involved with the project over the next year. The project team can also attend additional meetings with NASH.

Follow up Action Item(s)

Item	Description	Held By	Date Due	Status	Date Closed
13	The project team will reach out to the Norwalk Preservation Trust to set up a meeting.	Livingston, Ken	11.04.2016	0.5d late	11.04.2016 11:57AM
14	Investigate truck and commercial vehicle access to Merritt Parkway	Livingston, Ken	11.11.2016	0.2d late	11.11.2016 08:37AM
15	The project team will keep in contact with NASH and identify additional dates to meet.	Livingston, Ken	12.02.2016	11.0d early	11.16.2016 03:04PM

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Route 7-15 Norwalk

Route 7 - 15 Interchange
State Proj. No. 102-358

Subject: 7-15 Norwalk- Meeting with JoAnne Horvath and Creeping Hemlock 11
Date/Time: December 7, 2016 07:00 PM
Location: 301 Merritt 7, Norwalk, CT

Attendees:

First Name	Last Name	Email	Company	Attended
Richard	Armstrong	Richard.Armstrong@ct.gov	CTDOT	No
John	Eberle	John.Eberle@stantec.com	Stantec	Yes
Andy	Fesenmeyer	andy.fesenmeyer@ct.gov	CTDOT	Yes
Ken	Livingston	klivingston@fhiplan.com	Fitzgerald & Halliday, Inc.	Yes
Jennifer	Sweeney	Jennifer.Sweeney@ct.gov	CTDOT	Yes

Meeting Items

11.1

Topic: PROJECT MANAGEMENT/MEETINGS/PUBLIC OUTREACH **Status:**
Open

Discussion:

Andy F. presented an introduction of the project and project team. John E. followed with a review of project tasks and schedule. Ken L. presented an overview of the public involvement process.

The following questions and comments were asked during and after the presentation:

Q: Congestion is at the DMV/Grist Mill intersection can you extend Route 7?Q: What is potential cost of the project?

A: There is a separate state project evaluating the Grist Mill intersection and potential improvements. All projects are being coordinated.

Q: Are you aware of the planned 1,400 apartment units in the area?

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A: Yes, we are aware of that project and are working to identify and understand a wide variety of additional planned projects in the study area.

Comment: If you fix the clover-leaf intersection, there will be more traffic in the area and Grist Mill intersection will be worse.

Comment: There is no problem with congestion on Main Avenue. Main issue is Grist Mill.

Comment: Do not think this project will solve anything, what about spending more on mass transit.

Q: What is funding for this project?

A: $20 million allocated for environmental documentation and preliminary design. Construction funding has been identified within Let's Go CT, but has not been allocated.

Q: Will Creeping Hemlock remain two-way?

A: Yes.

Q: Will there be new on/off-ramps to neighborhoods or new locations of on/off-ramps?

A: There are no new planned locations of on/off-ramps. The project seeks to complete the missing connections between Route 7 and the Merritt Parkway.

Q: Will there be sound barriers constructed?

A: There will be a complete noise analysis completed with recommendations for sound mitigation.

Q: Will you evaluate needs for additional lighting?

A: Yes. We will need to work with the Merritt Parkway Conservancy in regards to potential lighting issues.

Q: Are the alternatives developed during early efforts still to be considered?

A: Prior alternatives will be reviewed. There is no intention to re-evaluate and/or consider prior discarded alternatives.

Q: How will water quality be considered during the alternative review process?

A: Water quality will be considered during the environmental documentation process. In the permitting effort, water quality permits will be secured with CTDEEP.

Comment: Would you consider Exit 38 as a connection or u-turn option with signage and redirection?

Follow up Action Item(s)

Item	Description	Held By	Date Due	Status	Date Closed

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Route 7-15 Norwalk

Route 7 - 15 Interchange
State Proj. No. 102-358

Subject: 7/15 Norwalk- Public Information Session #2 19
Date/Time: October 23, 2019 06:30 PM
Location: Norwalk City Hall Community Room

Attendees:

First Name	Last Name	Email	Company	Attended
Yolanda	Antoniak	yolanda.antoniak@ct.gov	CTDOT	Yes
Meghan	Bard	mbard@fhiplan.com	Fitzgerald & Halliday, Inc.	Yes
Mike	Calabrese	Michael.Calabrese@ct.gov	CTDOT	Yes
Marguerite	Carnell	MCarnell@ahs-inc.biz	Archaeological and Historical Services, Inc.	Yes
Tom	Doyle	Thomas.Doyle@ct.gov	CTDOT	Yes
John	Eberle	John.Eberle@stantec.com	Stantec	Yes
Andy	Fesenmeyer	andy.fesenmeyer@ct.gov	CTDOT	Yes
Emilie	Holland	emilie.holland@dot.gov	FHWA	Yes
Ken	Livingston	klivingston@fhiplan.com	Fitzgerald & Halliday, Inc.	Yes
Chris	Mojica	Christopher.Mojica@stantec.com	Stantec	Yes
Gary	Sorge	gary.sorge@stantec.com	Stantec Consulting Services Inc.	Yes
Paul	Stanton	pstanton@fhiplan.com	Fitzgerald & Halliday, Inc.	Yes

Meeting Items

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19.1

Topic: PROJECT MANAGEMENT/MEETINGS/PUBLIC OUTREACH **Status:** Open

Discussion:

(Note accompanying sign in sheet for additional public attendance)

Welcome

Michael Calabrese, of the Connecticut Department of Transportation (CTDOT), welcomed everyone to the 2nd Public Information Meeting for the Route 7/15 Norwalk Project. He explained that the meeting would review where the project has been, the alternatives screening process, current alternatives being considered, and the environmental documentation process.

Meeting Overview

Michael C. reviewed the meeting's agenda items:

1. Introductions
2. Project Overview
3. Where We Have Been
4. Remaining Alternatives
5. Environmental Documentation Process
6. Schedule

Project Overview

After introductions, Michael C. explained the limits of the project area and discussed the missing connections between the Merritt Parkway and Route 7. He also discussed the crash history at interchanges 39 and 40.

Where We Have Been

Michael C. gave a history of the project, beginning in the 1990's with the development of more than 20 alternatives. A recommended alternative was advanced through an Environmental Assessment (EA) to construction. He explained that a lawsuit halted construction on this preferred alternative in 2006. Following the lawsuit, a Stakeholder Advisory Committee was formed to identify a supported alternative. A new alternative, Alternative 21C, was supported by the community. The project, however, was put on hold in 2009 due to a lack of funds. The project effort was reinitiated in 2016, and a Project Advisory Committee (PAC) was formed. Michael C. explained its role and composition, including its role in developing the project's Purpose and Need.

John Eberle, of Stantec, explained that the Project Team developed a Needs and Deficiencies Report to first understand the issues and concerns within the project area. He urged people to visit the website to read the full document. He explained that the major deficiencies identified in the report are the missing Route 7/Merritt Parkway connections, the high number of crashes within the project area and substandard geometry amongst other issues.

John E. indicated that the next step in the project development process was to create the

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Purpose and Need Statement, for which the PAC provided assistance. He explained that the Purpose and Need Statement identifies the needs and underlying goals of the project and serves as the baseline for evaluating "must haves" that address the needs for an alternative being considered. The Purpose and Need Statement was presented to regulatory agencies in 2017. Additional refinements occurred given feedback, and the current version was revised in September 2018.

John E. explained that after understanding the deficiencies of the corridor and development of the Purpose and Need Statement, the next step was to reach out to the public to gain valuable feedback and local insights on the corridor. Two years ago, CTDOT hosted its first Public Information and Scoping Meeting, which was that effort to introduce the project to the community and obtain feedback on the project and the scope of work to be undertaken. The Project Team received many comments of which John E. summarized a few of the key ones (e.g. concern with signals on Route 7, discussion on the missing connections, environmental resource impact concerns etc). John E. again suggested that the project website has extensive information on that meeting including minutes, the meeting summary report and the actual presentation.

Remaining Alternatives

John E. said that the Project Team began the alternatives analysis process with 28 alternatives, most of which were developed from the previous project in the 2000's. He explained that CTDOT could have simply restarted the new project and gone forward with the previously preferred alternative (21C), but the decision was made to consider all previously discarded alternatives in light of the newly developed Purpose and Need. He then discussed the screening process, beginning with the Level 1 Screening. Under the Level 1 Screening, if an alternative did not meet the Purpose and Need, it could not move forward and must be discarded. The results of the Level 1 Screening were presented in a matrix to show how each alternative met or did not meet the Purpose and Need. Four of the 28 alternatives met the Purpose and Need and were carried forward into a Level 2 Screening. John E. used Alternative #4 as an example of an alternative that did not meet the 'mobility' criteria (no connections between Route 7 and Main Ave.) and therefore was discarded.He pointed out that the matrix showed most of the previous alternatives failed the mobility criteria and were discarded.

Of the 4 build alternatives that passed the Level 1 screening, John E. explained that one of them was identified as Alternative 21D. He explained that this was an alternative that previously was the preferred Alternative 21C from 2009, but refined to improve geometry and combine several of the proposed bridges. Alternative 12A and 20B were two other previous alternatives that were reexamined. The fourth alternative to pass the screening was Alternate 26 which introduced the addition of two signalized intersections on Route 7. He explained that the presentation reflected a matrix that included the "no build" option (which the team is required to assess all the alternatives against, as required under the National Environmental Policy Act (NEPA).

John E. explained that the project team next began a Level 2 Screening on the four remaining alternatives. He explained that the Level 2 Screening criteria were identified and then discussed and agreed to by the PAC. John E. gave a brief overview of the Level 2 screening criteria (i.e. compatibility with regional initiatives, construction costs, maintenance costs, integrating project roadways into environmental/neighborhood context, elevated ramps, potential impacts to Norwalk River, proximity of ramps to neighborhoods, construction duration and direct archaeological resource impact). He noted that one criterion titled "Elevated Ramps" was used

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to identify any alternative that incorporated ramps or roadways elevated higher than the Parkway as this was deemed to be a flaw flaw given past stakeholder opposition to this. The Level 2 Screening Matrix results were displayed showing how each alternative was graded on the various criteria. John E. explained that after screening evaluation, Alternatives 20B and 12A were eliminated from further consideration and Alternative 21D and 26 moved forward per the PAC's consensus.

Q: What is the reason for traffic signals on Route 7?

A: John E. said that the Western Connecticut Council of Governments (WestCOG) performed a past study, which suggested that a "boulevard concept" may be appropriate for Route 7. Given this initial suggestion, CTDOT determined that it was worthwhile to more fully detail and investigate this concept to understand if this should be an alternative to be considered. The Project Team then developed some concepts on a signalized Route 7 to determine if the concept could work. An initial traffic analysis indicated that the alternative worked from a traffic perspective, so it remained as an alternative to be considered. The traffic signals in Alternative 26 allow for at-grade access at Route 7 to Main Avenue and the Merritt Parkway.

Q: Will travel time be assessed?

A: Yes, as part of the EA, the Project Team will have more information on traffic to share with the public.

John E. continued and displayed a 3D design visualization model of the project alternatives, toggling between existing conditions, Alternative 21D and Alternative 26 from different perspectives. He discussed the missing connections and how each alternative addressed those linkages. He explained that Alternative 21D had a larger footprint than Alternative 26.

Q: Why wasn't Route 7 constructed as a completed interchange in the 90s?

A: The Project Team had no clear answer.

Q: How will Alternative 21D affect traffic?

A: The goal of all alternatives is to provide direct connections between Route 7 and the Merritt Parkway which should divert traffic off the local roads, thereby improving traffic operations for the local road network.

Q: The area behind Main Avenue (southwest of the Merritt Parkway/Main Avenue interchange) is park-like and has a serene feel. Will there be more noise, pollution, or extra traffic?

A: These factors are being assessed during the EA process.

Q: For Alternative 26, what will happen to the cloverleaf ramps that are no longer used?

A: Along Route 7, one of them will be removed, and the other (north of Parkway) will be adapted and integrated into the new alignment.

Q: Will the Main Avenue interchange be altered as part of the various alternatives?

A: The interchange will be different than it is currently.The alternatives all address the interchange essentially the same way. Today, there is considerable traffic that travels on Main Avenue to make the connection between Route 7 and the Merritt Parkway. In the build alternatives, traffic will not need to use Main Avenue because these missing connections will be constructed. The substandard existing ramps will generally be removed as part of the project and new connections constructed.

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Q: If Super 7 is not going to go all the way to Danbury, is this necessary now?

A: We're looking at future traffic projections and traffic conditions in the area will deteriorate. We can make this area better from a traffic perspective and the goal of the project is to improve conditions over what traffic condition might exist if nothing were done.

Q: Were autonomous vehicles considered?

A: They have not been considered at this time. We are aware of the discussion concerning autonomous vehicles however there is limited information at this time.

Environmental Documentation Process

Paul Stanton, of FHI, discussed the Environmental Documentation Process and how the project must comply with the National Environmental Policy Act (NEPA) and Connecticut Environmental Policy Act (CEPA). He explained that Alternatives 21D and 26 will be analyzed in the EA document and that Purpose and Need is the foundation of the EA. Paul S. said they are currently in the preparation phase, and they will conduct a public hearing after a draft document is prepared and made available for public review. They will look at many factors, including environmental, wetlands, natural resources, endangered species, and greenhouse gases, the built environment, socio-economic factors, noise, traffic community cohesion, and cultural resources, among other things.

Paul S. next discussed the interrelationship of the Section 106 (National Historic Preservation Act) State Historic Preservation Office (SHPO) coordination process with the NEPA Process and explained that after identifying key Section 106 stakeholders and consulting parties, and identifying historic/cultural resources within the project area, we are now at the stage of assessing project/alternative impacts to those historic/Section 106 resources.

Paul S. concluded by describing the process for determining the preferred alternative and how that information will be presented in the future.

Schedule

Andy F. discussed the project schedule. Construction is expected to begin in 2024. He showed a map depicting other projects currently or soon-to-be underway in the Norwalk Region, explaining that many of these projects are expected to be completed by the time construction on the Route 7-15 Project is slated to begin. He also mentioned that the Project Team is coordinating with projects adjacent to the 7-15 project.

Andy F. suggested that the next public meeting concerning this project would be in 2020 after the draft EA document is released for public comment.

Q: Is there a timeline or cost projection for construction?

A: There is still much design work to complete. Costs and schedule may shift as the design progresses. This is presumed to be a three-year construction project, with a cost of $100M to $200M depending on the alternative selected.

Q: Is it guaranteed that funding will be available?

A: The State currently has funding for the EA, engineering and Rights of Way. At this time there are no funds programmed for the construction phase.

Q: Traffic on Main Avenue is already a problem. Will the Creeping Hemlock ramp disappear?

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A: The Creeping Hemlock on ramp to access southbound Merritt Parkway will be removed. The Creeping Hemlock, Main Ave/Glover Ave intersection will be realigned with a new signal proposed at the new intersection. The southbound Merritt Parkway off ramp to Creeping Hemlock will remain with improvements incorporated.

Comment: There is a considerable amount of new roadway and maintenance required for Alternative 21D. With Route 7 not going to Danbury, I don't think Route 7 needs to be a freeway. Alternative 26 would provide better connections between people and communities.

Q: Will you be identifying those proposed improvements that are the same for both alternatives?

Response: That information will be described in the environmental document.

Q: Are there going to be bicycle and pedestrian changes in the project area?

A: Our goal is to provide bicycle and pedestrian facilities along Main Avenue within the project area and towards the rail station along Glover Avenue. The Project Team is also coordinating with WestCOG on their study of Main Avenue.

Comment: The plan should include the Norwalk River Valley Trail (NRVT) and the Merritt Parkway Trail. This area can become a significant regional trail intersection. The commenter felt that CTDOT will not allow an at-grade crossing at Grist Mill (as currently envisioned in the NRVT plan) to the north and west of the interchange and so CTDOT should consider a trail option that utilizes the Grist Mill bridge (tunnel) and routes south on Glover and through the Metro North tunnel at Merritt Parkway, eventually connecting to Perry Avenue. The commenter continued that while he understood a CTDOT rails representative rejected the use of the MNRR tunnel (at Glover Ave) for a trail, that should not stop the attempt to do so as this was critical to the trail success and connecting this area with the downtown Norwalk area.

Q: As autonomous vehicles are to be a reality, can you explain why they are not being considered as part of this project?

A: Information on autonomous vehicles is currently limited. As more guidelines and policies become established, that information will be considered as the project moves forward.

Comment: A member of the PAC Committee read a prepared statement in which she expressed her preference for Alternative 21D. See attached submitted text.

The meeting concluded and attendees were invited to stay to look at the 3D models of the alternatives.

Follow up Action Item(s)

Item	Description	Held By	Date Due	Status	Date Closed

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Reserved for EA/EIE Public Hearing Noise Comments

Reserved for EA/EIE Public Hearing Noise Comments