I-95 Southbound Collector Distributor Lanes – Rappahannock River Crossing Project

City of Fredericksburg, Stafford County, and Spotsylvania County

Overall Noise Abatement Design Study Final Report

VDOT UPC 101595, 110595, 112048

Project Numbers: 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751

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Prepared for:
Virginia Department of Transportation
1401 East Broad St.
Richmond, VA 23219

HARRIS MILLER MILLER & HANSON INC.

77 South Bedford Street, Burlington, MA 01803
T 781.229.0707

In Cooperation with:

Johnson, Mirmiran & Thompson, Inc.
9201 Arboretum Pkwy, Suite 310, Richmond, VA 23236
T 804.323.9900

EXECUTIVE SUMMARY

This report describes the details of the noise impact assessment and abatement design effort performed for the I-95 Southbound Collector Distributor (C-D) Lanes – Rappahannock River Crossing Project in the City of Fredericksburg and Spotsylvania and Stafford Counties, Virginia. The noise analysis was conducted in accordance with Federal highway Administration (FHWA) and Virginia Department of Transportation (VDOT) noise assessment regulations and guidelines, both of which were revised and updated significantly in 2011. The FHWA regulations are set forth in 23 CFR Part 772. VDOT's revised policy was updated most recently on February 20, 2018. The final design study reported herein builds upon previous studies, including an environmental reevaluation performed by VDOT in 2017 and the preliminary noise analysis performed by McCormick Taylor in 2014.

The Project seeks to reduce congestion along the southbound side of I-95 in Fredericksburg by separating local traffic from through traffic. From just north of Route 17 in Stafford County to just south of Route 3 in Spotsylvania County, three new I-95 southbound lanes will be constructed in the current median to serve as general purpose (GP) lanes for through (express) traffic. The three existing I-95 southbound lanes will be converted to three southbound C-D lanes for local traffic to access the interchanges at Routes 17 and 3. The Project also builds an additional bridge over the Rappahannock River, parallel to the existing I-95 southbound bridge.

The updated final barrier design effort was undertaken using the latest roadway design plans. The objective of this updated acoustical design study was to determine the feasibility and reasonableness of noise abatement measures where noise impacts were predicted for the design year loudest-hour conditions. Where noise barriers were determined to be feasible and reasonable, the study developed final lengths, heights, locations, expected noise reductions, reasonableness in square feet per benefited receptor, and total costs of potential noise barriers. This information was developed and conveyed in the form of individual noise abatement design reports for each feasible and reasonable noise barrier, which are included in this document in Appendix D. In addition, this study will include surveys of affected and potentially benefited property owners and residents on their attitudes and preferences about proposed noise barriers. The following table summarizes the noise impact throughout the study area due to the Project in the Design Year (2040).

Noise Impact Summary

Alternative	Impact Type	Number of Impacted Units by Land Use and FHWA Activity Category[1]				
		Residential Exterior (B)	Recreational Exterior (C)	Institutional Interior (D)	Commercial Exterior (E)	Total
2013 Existing	NAC	48	13	0	1	62
2040 Build	NAC	81	14	0	2	97

[1.] The FHWA Activity Category is shown in parentheses
Source: HMMH, 2019.

The table below presents a summary of each feasible barrier's acoustical design details, including location, number of benefited receptors, length, height range, surface area, total cost, surface area per benefited receptor, and whether the barrier is considered reasonable. Figure 1 (sheets 1 to 12) presented in Section 4 of this report, shows the locations of the barriers on study area maps. As indicated in the following table, noise abatement measures were found to be feasible and reasonable for three Common Noise Environments (CNEs).

- Noise Barrier F will be constructed as part of the current project, having received FHWA and VDOT approval, as well as community support.
- The final design and construction of Noise Barrier C will be deferred to the I-95 Northbound C-D Lanes Project (UPC 105510).
- The final design and construction of Noise Barrier FH North will be deferred to the I-95 Northbound C-D Lanes Project (UPC 105510).

Summary of Potential Noise Barriers

Barrier ID	Barrier Location	Number of Benefited Receptors	Barrier Length (feet)	Barrier Height (feet)	Surface Area (sq-ft)	Total Cost at $42/sq-ft	Barrier Surface Area/ Benefited Receptor	Reason-able?*** (SF/BR <1,600)
C*	Spotsylvania County, CNE C	16	1,609	15	24,140	$1,013,880	1,509	Yes*
D1	Spotsylvania County, CNE D	5	737	9 to 24	10,036	$421,512	2,007	No
D2	Spotsylvania County, CNE D	2	561	16	8,970	$376,740	4,485	No
F	Fredericksburg, CNE F	54	1,181	16 to 18	20,427	$857,934	378	Yes
FH North**	Fredericksburg, CNE FH North	11	404	16	6,466	$271,572	588	Yes**
G	Fredericksburg, CNE G	1	685	12 to 14	8,768	$368,256	8,768	No
H	Stafford County, CNE H	1	748	30	22,424	$941,808	22,424	No
I	Stafford County, CNE I	7	1,732	20	34,639	$1,455,258	4,331	No
J	Stafford County, CNE J	6	3,049	18	54,861	$2,304,162	9,144	No
K1	Stafford County, CNE K	1	464	14	6,497	$272,874	6,497	No
K2	Stafford County, CNE K	2	1,829	20	36,599	$1,537,158	18,300	No
N	Stafford County, CNE N	6	826	20	16,557	$695,394	2,760	No

Source: HMMH, 2019

* This is a preliminary design for Potential Noise Barrier C. This barrier is located on the northbound side of I-95 and within the study area for the I-95 Northbound C-D Lanes Project (UPC 105510). As a result, the final design for Barrier C will be evaluated as part of that project. Property owners and residents who would be benefited by Noise Barrier C were sent a notification letter to this effect.

** This is a preliminary design for Potential Noise Barrier FH North. This barrier is located on the northbound side of I-95 and within the study area for the I-95 Northbound C-D Lanes Project (UPC 105510). As a result, the final design will be evaluated as part of that project. Property owners and residents who would be benefited by Noise Barrier FH North were sent a notification letter to this effect.

*** "SF/BR" = square feet per benefited receptor.

A survey of the preferences of property owners and residents who would be benefited by noise barriers was performed in the spring of 2019. Based on the responses received and the votes tallied, Noise Barrier F is recommended for construction.

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1 INTRODUCTION

1.1 Background and Purpose

The Federal Highway Administration (FHWA) regulations for mitigation of highway traffic noise in the planning and design of federally aided highway projects are contained in Title 23 of the United States Code of Federal Regulations Part 772 (23 CFR 772). These regulations state that a "Type I" traffic noise impact analysis is required when there is the addition of through-traffic lanes or additional interchange ramps are added or relocated.

In 2014, a preliminary noise analysis was performed for the Rappahannock River Crossing Project in Stafford County, Spotsylvania County, and the City of Fredericksburg, Virginia.[1] For that study, the Project included the construction of collector-distributor (C-D) roads along the northbound and southbound sides of Interstate Route 95 (I-95). In the northbound direction, the proposed C-D road started at the Virginia Route 3 (VA 3) eastbound to I-95 northbound on-ramp and ended at the proposed I-95 northbound to U.S. Route 17 (US 17) westbound/northbound flyover. In the southbound direction, the C-D road started just south of US 17 and ended at the I-95 southbound off-ramp to VA 3 westbound. That preliminary noise study found two noise barriers to be feasible and reasonable – identified as noise barriers CNE B and CNE E.

In 2017, the Virginia Department of transportation (VDOT) conducted a supplemental review of the 2014 Preliminary Noise Analysis. Changes to the project design necessitated the supplemental review as part of an environmental reevaluation under the National Environmental Policy Act (NEPA).[2] The reevaluation considered the following design modifications and their implications on the preliminary noise analysis:

- The relocation of the general purpose (GP) lanes to the median and reuse of the existing GP lanes as C-D lanes in the southbound direction;
- A northward extension of the northern project terminus for the southbound C-D lanes (0.7 miles), as well as a southward extension of the southern project terminus for the southbound C-D lanes (1.0 miles); and
- Minor modifications to the ramps at the VA 3 and US 17 interchanges.

As noted in the environmental reevaluation, the design modifications added new noise-sensitive land uses at both the northern and southern ends of the study area that were not previously included in the preliminary noise analysis. The environmental reevaluation also assessed noise impacts for undeveloped lands where there was evidence of a definite commitment to develop land with an approved specific design of land use, as demonstrated by the issuance of at least one building permit. Due to the environmental reevaluation, VDOT, in consultation with FHWA, determined that the

[1] "Preliminary Noise Analysis, I-95 Rappahannock River Crossing, City of Fredericksburg, Stafford County, Spotsylvania County, State Project No. 0095-111-259, P101, UPC 101595, 0095-111-270, P101, UPC 105510," prepared by McCormick Taylor, September 2014.

[2] Virginia Department of Transportation, memorandum from T. Ross Hudnall to File with subject "Rappahannock River Crossing NEPA Reevaluation," UPC 101595, Project No. 007-053-086, B668, C501, P101, R201, dated August 7, 2017.

Date of Public Knowledge of the Project would coincide with the new approval date under NEPA. The Date of Public Knowledge for this Project is September 7, 2017.[3]

This report documents the results of a Final Design Noise Analysis for the latest project design. Consistent with VDOT policies, the current study recomputed highway traffic noise levels, reassessed noise impact, and reevaluated the feasibility and reasonableness of noise abatement for the I-95 Southbound C-D Lanes – Rappahannock River Crossing Project (the "Project"). Initially, the project study area extended from its northern terminus at Truslow Road in Stafford County to its southern terminus approximately 1.29 miles south of Exit 130 (the I-95 / VA 3 interchange) in the City of Fredericksburg. However, in August 2018, the project limits were extended to consider new "tie-ins" at both the northern and the southern termini. The northern tie-in overlaps with the I-95 Express Lanes Fredericksburg Extension (Fred Ex) Project (UPC 110527), while the southern tie-in meets the existing I-95 alignment approximately 1.19 miles south of the existing gore point of the on-ramp from VA 3 eastbound to I-95 southbound.

Wherever noise barriers were found to be feasible and reasonable, this study confirmed their final lengths, heights, locations, expected noise reductions, reasonableness in square feet per benefited receptor, and total costs. This information was developed and conveyed to VDOT and FHWA in the form of Noise Abatement Design Reports (NADRs) for each feasible and reasonable noise barrier.

This report also documents the results of two surveys of affected and potentially benefited property owners and residents. The objective of the surveys was to ask those property owners and residents about their attitudes and preferences by casting a vote either in favor of or in opposition to the construction of each potential noise barrier. All votes were tallied in accordance with current VDOT policies and guidance.

This report provides a summary of the noise abatement criteria and goals applied, procedures used, and the results obtained during the acoustical design of the potential noise barriers for this Project. The body of the report provides appropriate detail for a thorough understanding of the study process and results. The primary study products, which are the individual acoustical design reports, as well as other detailed information about the study, are included in the appendices to this report. The acoustical design report for each feasible and reasonable noise barrier includes its final location, length and height, computed with- and without-barrier sound levels, noise reduction provided by the barrier, cost estimate and reasonableness in terms of square feet of barrier per benefited receptor.

Figure 1 provides an overview graphic of the study area with the locations of the short-term measurement sites used in this study. Appendix D provides detailed graphics that show the proposed roadway improvements, existing and potential noise barriers, and the affected properties represented by noise receptors.

1.2 Summary of Proposed Roadway Improvements

The project seeks to reduce congestion along the southbound side of I-95 in Fredericksburg by separating local traffic from through traffic. From just north of Route 17 in Stafford County to just south of Route 3 in Spotsylvania County, three new I-95 southbound lanes will be constructed in the current median to serve as general purpose (GP) lanes for through (express) traffic. The three existing I-95 southbound lanes will be converted to three southbound C-D lanes for local traffic to

[3] Email from T. Ross Hudnall to Christopher Bajdek with subject "Re: FW: Development Screening" and dated 7/31/2018 at 10:41 AM.

access the interchanges at Routes 17 and 3. The Project also builds an additional bridge over the Rappahannock River, parallel to the existing I-95 southbound bridge.

Figures provided later in the report show the locations of the proposed roadway improvements and potential noise barrier locations.

1.3 Study Area – Common Noise Environments

Noise-sensitive land use in the project study area includes exterior activity areas associated with single-family residences along both sides of I-95, the Hamptons at Noble apartment complex, outdoor dining/patios/pools at several commercial properties, residential and recreational uses at the New Life in Christ Church, and recreational land use at Chichester Park. Existing noise-sensitive properties also include several facilities with interior use. Following VDOT and FHWA policies and procedures, the receptors used in the model to represent exterior activity areas at noise-sensitive land uses were grouped into Common Noise Environments (CNEs). Receptors in a CNE are exposed to similar noise sources and levels, and generally occur between secondary noise sources, such as traffic on cross-streets. The following paragraphs describe how the modeled receptors were grouped into CNEs.

CNE A is located on the northbound side of I-95 in Spotsylvania County south of the VA 3 interchange. Noise-sensitive land use primarily consists of single-family homes in the Kingswood subdivision. The north end of CNE A is within 500 feet of the southern project limit, while the south end of CNE A extends beyond that zone to Harrison Road for the purpose of neighborhood continuity. In the event that noise impact would occur in the north end, noise abatement would be evaluated throughout the subdivision. CNE A also includes recreational land use consisting of a swimming pool, athletic fields, a playground, tennis courts, and a basketball court.

CNE A was previously identified as Noise Sensitive Area 15 (NSA 15) in the 2017 environmental reevaluation, and was also evaluated in the noise study for the I-95 HOT Lanes Project (UPC 70850).

CNE C is located on the northbound side of I-95 in the Village of Idlewood in the City of Fredericksburg. CNE C is south of the VA 3 interchange. Noise-sensitive land use consists of single-family homes on Pickett Street & Pickett Circle, as well as recreational facilities including a pool, a playground, and a tennis court.

CNE C was previously identified as NSA 14 in the environmental reevaluation, and was also evaluated in the noise study for the I-95 HOT Lanes Project.

CNE D is located on the southbound side of I-95, south of the VA 3 interchange, in Spotsylvania County. The southern end of CNE D consists of two single-family residences on Burgess Lane and various land uses associated with the New Life in Christ Church, including two satellite buildings, a baseball field, and a playground. Correspondence with the county indicated that the two satellite buildings at the church are permitted as classrooms. The northern end of CNE D consists of an outdoor patio associated with a bowling alley, an interior land use associated with a movie theater, and exterior activity areas associated with a hotel (a pool and basketball court).

CNE D was previously identified as CNE S in the 2017 environmental reevaluation.

CNE E is located along the southbound side of I-95 in the northwest quadrant of the VA 3 interchange in the City of Fredericksburg. Noise-sensitive land use in CNE E consists of outdoor

dining and/or patios at four restaurants. CNE E was previously identified as CNE A in the 2014 preliminary noise analysis.

CNE F is located in the City of Fredericksburg on the southbound side of I-95 between the Fall Hill Avenue overpass in the north and the Cowan Boulevard overpass in the south. Existing land use consists of relatively new multi-family residential units that are part of the Hamptons at Noble apartment complex, as well as an existing single-family home on Briscoe Lane. Portions of CNE F were previously referred to as CNE AA in the environmental reevaluation and CNE B in the preliminary noise analysis.

CNE G is located in the City of Fredericksburg on the southbound side of I-95 just north of the Fall Hill Avenue overpass. Existing land use consists of outdoor patios at two hotel and picnic tables at Virginia Welcome Center. CNE G was previously identified as CNE D in the preliminary noise analysis.

CNE H is located on the southbound side of I-95 approximately 0.5 miles south of US 17 in Stafford County. Existing land use consists of single-family home in Hartwood on Riverside Parkway. CNE H was previously identified as CNE F in the preliminary noise analysis.

CNE I is located on the northbound side of I-95 south of the US 17 interchange in Stafford County. Existing land use consists of single-family homes on Kreiger Lane and Musselman Road in George Washington. CNE I was previously identified as CNE G in the preliminary noise analysis.

CNE J is located on the northbound side of I-95 from 0.33 miles south of the Truslow Road overpass to 0.15 miles north of the overpass in Stafford County. Noise-sensitive land use consists of single-family homes on Old Falls Road, Beagle Road, and Truslow Road in Falmouth. CNE J was previously identified as CNE K in the preliminary noise analysis.

CNE K is located on the southbound side of I-95, just north of the Truslow Road overpass in Stafford County. Noise-sensitive land use consists of single-family homes on Truslow Road and Samuels Lane. CNE K was previously identified as CNE VV in the environmental reevaluation and also was evaluated in the noise analysis for the Fred Ex project.

CNE L is located on the southbound side of I-95, just south of the US 17 interchange in Stafford County. Noise-sensitive land use consists of a pool at a hotel and interior spaces at a performance center and a university. The hotel pool was previously identified as CNE I in the preliminary noise analysis.

CNE M is located on the southbound side of I-95, just north of the US 17 interchange in Stafford County. Existing noise-sensitive land use consists of outdoor dining and/or patios at restaurant. CNE M was previously identified as CNE I in the preliminary noise analysis.

CNE N is located on the northbound side of I-95 in the vicinity of the northern project terminus in Stafford County. Portions of the southern baseball field (Field 1) at Chichester Park are located within 500 feet of the project terminus. CNE N was previously identified as CNE UU in the environmental reevaluation and also was evaluated in the noise analysis for the Fred Ex project.

CNE FH South is located on the northbound side of I-95 south of Fall Hill Avenue and north of Cowan Boulevard. Existing noise-sensitive land use consists of residences, outdoor seating areas, a courtyard, a playground, a volleyball court and a basketball court. This CNE is located behind an existing noise barrier that was constructed and completed in 2017 as part of the I-95 Safety

Improvements Project (UPC 107715).[4] CNE FH South was previously identified as CNE C in the preliminary noise analysis.

CNE FH North is located on the northbound side of I-95 north of Fall Hill Avenue. Existing land use consists of the Hughey Court townhomes and the Bragg Hill Family Center. This CNE is located behind an existing 260-foot long noise barrier that was constructed part of the Fall Hill Avenue Widening Project (UPC 88699). Since the Bragg Hill Family Center was beyond the project limit for the Fall Hill Widening Project, it was not evaluated as part of that project.[5] CNE FH North was previously identified as CNE E in the preliminary noise analysis.

1.4 Existing Noise Barriers

As noted in the environmental reevaluation, there are two existing noise barriers along the northbound side of I-95 in Fredericksburg. One of the noise barriers was built along the back of the Hughey Court townhome development, north of Fall Hill Avenue, as part of the Fall Hill Avenue Widening Project (UPC 88699). This barrier was built along the southern end of the community identified as CNE E in the 2014 preliminary noise study. The other noise barrier was built to the south of Fall Hill Avenue, as part of the I-95 Safety Improvements at Route 3 Project (UPC 107715).

1.5 Date of Public Knowledge and Undeveloped Lands

VDOT is currently operating under an agreement with FHWA that the Date of Public Knowledge for this project is September 7, 2017, when the Southbound NEPA Reevaluation was approved by FHWA.[6] To be eligible for abatement consideration, developed and undeveloped lands are required to have been "permitted" by the Date of Public Knowledge. A property is eligible for noise abatement if there is a definite commitment to develop land with an approved specific design of noise-sensitive land use activities as evidenced by the issuance of a building permit.

Based on communications between VDOT and the three localities, there have been no newly permitted land use activities between the date of the preliminary noise study and the Date of Public knowledge.

- In Spotsylvania County, there is only one subdivision, a portion of which is within 1,000 feet of the Project, called Avalon Woods, with 98 single-family lots. As of July 26, 2018, the County had not approved the final plat, nor had it issued a permit.[7]
- In Fredericksburg, there are several properties on Noyock, Mecox, and Sag Harbor roads that were issued buildings permits on February 12, 2018. These properties are part of the Hamptons Phase II project, which is the second phase of the Hamptons at Noble apartment

[4] Refer to footnote 2.

[5] Refer to footnote 2.

[6] Email from T. Ross Hudnall to Christopher Bajdek with subject "Re: FW: Development Screening" and dated 7/31/2018 at 10:41 AM.

[7] Email from T. Ross Hudnall to Christopher Bajdek with subject "Fwd: Development Screening for the Rappahannock River Crossing Project" and dated 7/31/2018 at 10:15 AM.

complex. These properties were permitted after the Date of Public Knowledge and are therefore not eligible for consideration of noise abatement.[8]

- In Stafford County, there is are two subdivisions, portions of which are within 1,000 feet of the Project, called the Rappahannock Landing Apartments and the Cherryview Apartments. As of July 18, 2018, neither had been issued a building permit.[9]

VDOT is under no obligation to provide noise abatement for any noise-sensitive properties that were permitted after the Date of Public Knowledge.

2 NOISE ABATEMENT CRITERIA AND DESIGN GOALS

2.1 Regulations and Guidelines

The noise impact of the proposed Project was assessed in accordance with FHWA and VDOT noise assessment regulations and guidelines. The FHWA regulations are set forth in 23 CFR Part 772[10]. On July 13, 2010, FHWA published revised noise regulations which became effective on July 13, 2011. FHWA has also published a guidance document to support the new regulations.[11] VDOT prepared revisions to its noise policy in accordance with FHWA's requirements and revised policy. VDOT's revised policy has received approval from FHWA, and was updated on February 20, 2018.[12]

2.2 Noise Abatement Criteria

To assess the degree of impact of highway traffic and noise on human activity, the FHWA established Noise Abatement Criteria (NAC) for different categories of land use activity (see Table 1). The NAC are given in terms of the hourly, A-weighted, equivalent sound level in decibels (dBA). The A-weighted sound level is a single number measure of sound intensity with weighted frequency characteristics that corresponds to human subjective response to noise. Most environmental noise (and the A-weighted sound level) fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number called the equivalent sound level (L_{eq}). The L_{eq} is the value or level of a steady, non-fluctuating sound that represents the same sound energy as the actual time-varying sound evaluated over the same time period. For traffic noise assessment, L_{eq} is typically evaluated over a one-hour period, and may be denoted as $L_{eq}(h)$.

[8] See note 6.

[9] See note 6.

[10] 23 CFR Part 772, as amended 75 FR 39820, July 13, 2010; Effective date July 13, 2011 – "Procedures for Abatement of Highway Traffic Noise and Construction Noise," Federal Highway Administration, U.S. Department of Transportation. http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/

[11] "Highway Traffic Noise: Analysis and Abatement Guidance," Federal Highway Administration, U.S. DOT, June 2010, revised January 2011. http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf

[12] "Highway Traffic Noise Impact Analysis Guidance Manual (Version 8)," Virginia Department of Transportation, updated February 20, 2018. http://www.virginiadot.org/projects/pr-noise-walls-about.asp

Noise-sensitive land use within the Project study area consists of residential properties (Activity Category B), recreational areas (Activity Category C), and commercial properties (Activity Category E). Activity Category D land uses are also present in the study area.[13] For Categories B and C, noise impact would occur when predicted exterior noise levels, due to the project, approach or exceed 67 dBA in terms of $L_{eq}(h)$ during the loudest hour of the day. VDOT defines the word "approach" in "approach or exceed" as within 1 decibel. Therefore, the threshold for noise impact is where exterior noise levels are within 1 decibel of 67 dBA $L_{eq}(h)$, or 66 dBA. Noise impact also would occur wherever project noise causes a substantial increase over existing noise levels. VDOT defines a substantial increase as an increase of 10 decibels or more above existing noise levels.

Table 1 FHWA Noise Abatement Criteria

Activity Category	$L_{eq}(h)$[1]	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B[2]	67 (Exterior)	Residential
C[2]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	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 (without building permits)

[1] Hourly Equivalent A-weighted Sound Level (dBA)
[2] Includes undeveloped lands permitted for this activity category
Source: 23 CFR Part 772.

[13] The interior criterion for Activity Category D land uses applies to noise-sensitive properties for which there are no exterior activity areas with frequent human use. There are two Activity Category D land uses in CNE L – Strayer University (at 150 Riverside Parkway) and Riverside Center for the Performing Arts (at 95 Riverside Parkway). There is one Activity Category D land use in CNE D – the Paragon Village 12 movie theater (at 51 Towne Centre Boulevard). Note that the New Life in Christ Church in CNE D is not considered an Activity Category D land use since it has exterior activity areas.

When the predicted design-year Build case noise levels approach or exceed the NAC during the loudest hour of the day or cause a substantial increase over existing noise levels, consideration of traffic noise reduction measures is necessary. For this study, noise levels throughout the study area were determined for the design-year (2040) Build alternative.

All noise-sensitive land uses potentially affected by the project are near roads for which traffic data was developed as part of the environmental study. Therefore, all noise levels were computed from the appropriate loudest-hour traffic data.

2.3 Noise Abatement Measures, Goals and Process

FHWA has identified certain noise abatement measures that may be incorporated in projects to reduce traffic noise impact. In general, mitigation measures can include alternative measures (traffic management, the alteration of horizontal and vertical alignment, and low-noise pavement), in addition to the construction of noise barriers.

2.3.1 Alternative Noise Abatement Measures

Traffic management measures normally considered for noise abatement include reduced speeds and truck restrictions. Reduced speeds would not be an effective noise mitigation measure since a substantial decrease in speed is necessary to provide a significant noise reduction. A 10 mph reduction in speed would result in only a two decibel decrease in noise level. Restricting truck usage on I-95 is not practical as truck traffic is a function of this interstate highway, and the diversion of truck traffic to other roadways would increase noise levels in those areas. The alteration of the horizontal or vertical alignment of I-95 also would not be practical because the roadway would have to undergo a significant shift in the horizontal alignment to make the measure effective. Such shifts would require right-of-way acquisitions and would likely create new noise impact.

Additionally, the Noise Policy Code of Virginia (HB 2577, as amended by HB 2025) states:

> "*Requires that whenever the Commonwealth Transportation Board or the Department plan for or undertake any highway construction or improvement project and such project includes or may include the requirement for the mitigation of traffic noise impacts, first consideration should be given to the use of noise reducing design and low noise pavement materials and techniques in lieu of construction of noise walls or sound barriers. Vegetative screening, such as the planting of appropriate conifers, in such a design would be utilized to act as a visual screen if visual screening is required."*

Consideration was given to these measures during the final design stage, where feasible. The response from project management is included in Appendix G**.**

2.3.2 Noise Barrier Feasibility and Reasonableness Criteria and Design Goals

The only remaining abatement measure investigated was the construction of noise barriers. The feasibility of noise barriers was evaluated in locations where noise impact is predicted to occur with the Build alternative. Where the construction of noise barriers was found to be physically practical, barrier noise reduction was estimated based on roadway, barrier, and receiver geometry as described below.

FHWA and VDOT require that noise barriers be both "feasible" and "reasonable" to be recommended for construction. State DOTs have established individual feasibility and reasonableness criteria within federally mandated guidelines. VDOT's criteria are summarized here.

To be feasible, a barrier must be acoustically effective, that is it must reduce noise levels at noise sensitive locations by at least 5 decibels, thereby "benefiting" the property. VDOT requires that at least fifty percent (50%) of the impacted receptors receive 5 decibels or more of insertion loss from the proposed barrier for it to be feasible.

A second feasibility criterion is that it must be possible to design and construct the barrier. Factors that enter into constructability include safety, barrier height, topography, drainage, utilities, maintenance of the barrier, and access to adjacent properties. VDOT has a maximum allowable height of 30 feet above ground level for noise barriers.

Barrier reasonableness is based on three factors: cost-effectiveness, ability to achieve VDOT's insertion loss design goal, and views of the benefited receptors. To be "cost-effective," a barrier cannot require more than 1,600 square feet per benefited receptor. VDOT's maximum barrier height of 30 feet figures into the assessment of benefited receptors. Where multi-family housing includes balconies at elevations above that of a 30-foot high barrier, or terrain lifts ground-based receptors above the elevation of a 30-foot barrier, these receptors will not be assessed for barrier benefits and are thereby not included in the computation of the barrier's feasibility or reasonableness.

The second reasonableness criterion is VDOT's noise reduction design goal of 7 decibels. This goal must be achieved for at least one of the impacted receptors for the barrier to be considered reasonable.

The third reasonableness criterion relates to the views of the owners and residents of the potentially benefited properties. A majority of the benefited receptors must favor the barrier for it to be considered reasonable to construct. Community views are surveyed in this, the final design phase of the roadway improvement Project.

2.3.3 Acoustical Design Process

The acoustical design process involves locating barriers in cost-efficient locations initially, such as at the top of slope where a roadway is in cut, and near the edge of the roadway where it is on fill and above the elevation of affected receivers. Barriers are always located within the project right of way, unless extenuating circumstances require locating a portion of a barrier on private or municipal property. Initially in the design, barriers are evaluated at several heights to determine the heights necessary to achieve sufficient noise reduction. Where sound levels are relatively high (mid-70s dBA or higher), barriers are designed to achieve notably greater noise reduction than 5 dBA, so that where possible, the resulting noise levels are below the impact threshold of 66 dBA. Achieving this goal is not always possible, however, if the reasonableness criterion of 1,600 square feet of barrier per home benefited is exceeded as a result of the increased barrier height.

Normally, noise barriers are evaluated within the project limits of the roadway improvement. However, VDOT will extend noise barriers beyond project limits, if needed to maintain continuity of noise protection for a cohesive residential neighborhood. For such neighborhood continuity, noise abatement may be considered for noise impacts that are projected to occur at distances of up to 500 feet from the roadway improvements.

3 NOISE ANALYSIS METHODOLOGY

In a noise abatement design study, the noise analysis involves development of a refined model for highway traffic noise prediction and design of the barriers. That refined model is used first to

determine areas where noise impact would occur in the future Design Year, then to evaluate whether noise barriers to mitigate noise impacts are both feasible and reasonable. Barriers found to be feasible and reasonable are then taken through a detailed acoustical design process to establish location, length and height appropriate for structural design and construction.

3.1 Noise Modeling

All traffic noise calculations for this study were performed using the FHWA-mandated Traffic Noise Model[14] (TNM) first released by FHWA in April 1998 for use on Federal-aid highway noise projects. The latest version of TNM (Version 2.5) was used for all traffic noise level computations and noise barrier design.

TNM separately calculates the noise contribution of each roadway segment at a given receiver. For each roadway segment, the noise from each vehicle type is computed from the reference energy-mean emission level, and adjusted for vehicle volume, speed, grade, roadway segment length, and source-to-receiver distance. Further adjustments needed to accurately model the sound propagation from source to receiver include shielding provided by rows of buildings, the effects of different ground types, source and receiver elevations, and the effects of any intervening noise barriers or trees. The program sums the noise contributions of each vehicle type for a given roadway segment at the receiver. TNM then repeats this process for all roadway segments, summing their contributions to generate the predicted noise level at each receiver.

TNM incorporates sound emissions and sound-propagation algorithms based on well-established theory or on accepted international standards. The acoustical algorithms contained within the FHWA TNM have been validated with respect to carefully conducted noise measurement programs, and show excellent agreement in most cases for sites with and without noise barriers. TNM takes into account:

- Vehicle classifications, volumes, and speeds.
- Attenuation due to ground reflections off a large selection of ground types.
- Effects of roadway edges and other edges between ground of different types.
- Attenuation over noise walls, including their interaction with reflections from the ground.
- Attenuation over earth berms and similar intervening hills/terrain.
- Attenuation over/through rows of buildings.
- Attenuation through dense foliage.
- Combined emission/speed effects of accelerating, full-throttle traffic on on-ramps and near stop signs, traffic signals, and toll barriers.
- Combined emission/speed effects of decelerating, full-throttle vehicles on upgrades and subsequent effects as these vehicles later regain speed.

The modeling of roadway segments, terrain geometry, structural shielding, residential receivers, and proposed noise barrier locations was based on: 1.) revised Microstation roadway design files

[14] Anderson, G.S., C.S.Y. Lee, G.G. Fleming, and C.W. Menge, "FHWA Traffic Noise Model, Version 1.0 User's Guide". Federal Highway Administration Report No. FHWA-PD-96-009, January 1998.

supplied by JMT; 2.) aerial photography, revised elevation and GIS data provided by and/or obtained from VDOT and third-party sources;[15,16] and 3.) field verification.

To fully characterize future noise levels at all noise-sensitive land uses in the study area, noise prediction receivers (also called "receptors" and/or "sites") were added to the measurement sites in the TNM model. The study area includes residential and some recreational land use adjacent to project roadways. Each receptor included in the model is representative of exterior noise-sensitive land use. All TNM runs are provided upon request in native electronic form.

3.2 Measurements of Existing Traffic Noise Levels

A noise measurement program in the Project study area was carried out to provide current and sufficient information for a model validation exercise. Short-term noise measurements of 30 minutes duration were obtained at 12 sites on May 23 and 24, 2018. Measurement sites were generally located in areas with the highest noise exposures, mostly adjacent to first-row and some second-row homes.

The measurement procedure involved the measurement of one-minute L_{eq}s so that the minutes including noise events unrelated to traffic on I-95 (such as aircraft over-flights and traffic on local roads) could later be excluded from consideration. Vehicle classification counts for traffic on I-95 were conducted simultaneously with the noise measurements, so that normalized traffic count data could be used as input to the TNM model for model validation.

Short-term noise monitoring is not a process to determine design year noise impacts or barrier locations. Short-term noise monitoring provides a level of consistency between what is present in real-world situations and how that is represented in the computer noise model. Short-term monitoring does not need to occur within every CNE to validate the computer noise model.

Short-term noise measurements were conducted using an HMMH-owned Larson-Davis 824 (ANSI Type I, "Precision") integrating sound level meter with a 1/3 octave band real-time analyzer. HMMH's noise measurement instrumentation was field calibrated at regular intervals during the measurement program. In addition, all HMMH instruments are calibrated annually at a certification laboratory, with calibrations traceable to the National Institute of Standards and Technology. A copy of the calibration certificate for the instrument used for the measurements is included in Appendix E.

Table 2 provides a summary of the noise measurement sites and locations, along with measurement date, time, duration and the measured L_{eq} from traffic on I-95. As shown in the table, the measured Traffic-only L_{eq} is very nearly that same as the Total L_{eq} at each site, indicating that traffic noise from I-95 was the dominant source of noise throughout the study area. The measurement site locations are shown in the Figure 1 study area maps.

The noise measurement field data sheets with site sketches, measured noise levels and traffic counts, along with site photographs and noise monitor sound level and calibration output are provided in Appendix E.

[15] Lidar data were acquired from "United States Department of Agriculture, Natural Resource Conservation Service, Geospatial Data Gateway." Accessed on-line at: http://datagateway.nrcs.usda.gov/.

[16] Aerial Photography came from Bing Aerial Photography, Live stream through ArcGIS online. Tiles were exported from ArcGIS.

Table 2 Noise Measurement Summary

Site No.	Address/Location	Date	Time Start (hh:mm:ss)	Duration (minutes)	Measured Total L_{eq}, (dBA)	Measured Traffic-only L_{eq} (dBA)
ST-1	cul-de-sac at end of Queensbury Court	5/24/2018	12:35:28	30	59	59
ST-2	11804 Berwick Court	5/24/2018	11:54:13	30	65	65
ST-3	11925 Burgess Lane (New Life Church)	5/24/2018	9:16:29	30	68	68
ST-4	cul-de-sac at north end of Pickett Street	5/24/2018	13:48:13	30	62	62
ST-5	Noble Way Apartments (south by pond)	5/23/2018	16:10:28	30	63	63
ST-6	Noble Way Apartments (central)	5/23/2018	15:31:19	30	63	63
ST-7	Noble Way Apartments (north by pool)	5/23/2018	14:54:11	30	67	67
ST-8	400 Bragg Hill Drive (Kingdom Family Worship Center)	5/24/2018	10:18:13	30	65	65
ST-9	18 Riverside Parkway	5/23/2018	12:22:11	30	62	62
ST-10	Musselman Road cul-de-sac	5/23/2018	11:28:11	30	71	71
ST-11	48 Old Falls Road	5/23/2018	8:43:10	30	64	64
ST-12	544 Truslow Road (Stafford Nursery)	5/23/2018	10:00:16	30	72	72

Source: HMMH, 2018

3.3 Noise Model Validation

During the noise measurement program, simultaneous vehicle classification counts were conducted for traffic on I-95. By entering normalized traffic data into the noise model developed for the study area and locating the measurement sites accurately, the accuracy of the noise model representation can be validated.

There are many factors that influence the measured noise levels that may cause differences with computed noise levels of up to several decibels. Such factors include atmospheric conditions (upwind, neutral or downwind), shielding by structures that may be difficult to model, and the representativeness of louder vehicles passing during the measurement period. Factors in the model that may cause differences with the measured noise levels include level of detail in terrain modeling, and the degree of inclusion of smaller elements such as hard ground zones, tree zones and sparse rows of buildings.

The purpose of a validation exercise is to evaluate the success of the model in representing the important acoustical characteristics of the study area. This is determined by examining the overall trend of the differences between measured and computed values. The individual site to site differences will vary more significantly, depending on the factors mentioned in the previous paragraph. The FHWA does not allow the model to be "calibrated" or adjusted by a certain amount

to make the measurements match the computed values. The reasons for this are 1) the TNM has been sufficiently validated through FHWA-funded research projects and it has been found to be highly accurate, and 2) the FHWA recognizes that many factors are present both in the measurement of noise and in developing an accurate model that can lead to variability.

The validation process compares monitored sound levels at each measurement site to the noise levels calculated with TNM using the existing site geometry and normalized traffic count data as input to the model. The modeling assumptions are refined, as necessary, until the agreement between monitored and calculated noise levels are within an acceptable range of ± 3 dBA, in accordance with VDOT policy.

The results of the model validation are shown in Table 3. The Project-wide average difference between calculated noise levels and monitored noise levels was +1.0 decibels (over all 12 sites), which shows excellent agreement between monitored and modeled sound levels and suggests confidence in the modeling assumptions. As shown in Table 3, the differences between the calculated and monitored levels were outside the acceptable range at Sites ST-4 and ST-9.

At Site ST-4, the calculated noise level was 66.0 dBA L_{eq}, while the monitored noise level was 61.6 dBA L_{eq}, representing an apparent over-prediction of 4.4 dBA. There is a stockade fence, of up to 6 feet in height, along the right-of-way between ST-4 and the northbound lanes of I-95. Stockade fences are typically not very effective sound attenuators due to the gaps that exist between and below the vertical panels. However, if the stockade fence is of sufficient mass and gaps are small, it may provide some excess sound attenuation. A few decibels of excess attenuation from the fence is plausible for site ST-4 and was not accounted for in the noise model.

At Site ST-9, the calculated noise level was 64.9 dBA L_{eq}, while the monitored noise level was 61.7 dBA L_{eq}, representing an apparent over-prediction of 3.2 dBA. This site has significant attenuation that could be attributed to trees and terrain. A review of a photograph taken during the noise measurement suggests that there was likely more vegetation along the propagation path than what had been accounted for in the model.

Appendix C provides tables with further detail on the validation exercise, including counted traffic data normalized to one hour and the coordinates of the measurement sites.

Table 3 Computed vs. Measured Sound Levels at Measurement Sites

Site No.	Address/Description	Land Use	Measured Traffic-Only L_{eq} (dBA)	Computed L_{eq} (dBA)	Difference (dBA)
ST-1	cul-de-sac at end of Queensbury Court	Residential	58.7	56.0	-2.6
ST-2	11804 Berwick Court	Residential	64.5	62.3	-2.2
ST-3	11925 Burgess Lane (New Life Church)	Church & Athletic Fields	67.7	70.2	2.5
ST-4	cul-de-sac at north end of Pickett Street	Pool & Tennis Courts	61.6	66.0	4.4
ST-5	Noble Way Apartments (south by pond)	Residential	63.2	65.3	2.1
ST-6	Noble Way Apartments (central)	Residential	63.4	61.2	-2.2
ST-7	Noble Way Apartments (north by pool)	Residential	66.8	68.5	1.8
ST-8	400 Bragg Hill Drive (Kingdom Family Worship Ctr)	Church Playground	65.0	63.8	-1.2
ST-9	188 Riverside Parkway	Residential	61.7	64.9	3.2
ST-10	Musselman Road cul-de-sac	Residential	71.2	73.3	2.1
ST-11	48 Old Falls Road	Residential	64.0	66.3	2.2
ST-12	544 Truslow Road (Stafford Nursery)	Commercial	72.3	74.3	2.0
	Average Difference				1.0
	Standard Deviation of Differences				2.4

Source: HMMH, 2018

3.4 Traffic Data for Noise Prediction

The traffic data used in the noise analysis must produce sound levels representative of the loudest hour of the day in the future design year, per FHWA and VDOT policy. JMT provided HMMH with traffic data for the design year of 2040 as well as for the 2013 Existing case for all of the mainline Project roadways and the ramps at both of the interchanges in the study area, as well as the major cross streets (Route 17 and Route 3). The traffic data were provided as hourly volumes in VDOT's Environmental Traffic Data (ENTRADA) spreadsheets. HMMH conducted a determination of the loudest hour of the day consistent with VDOT's current methodology. The loudest-hour evaluation began by using TNM to compute the overall traffic noise level at a reference distance from I-95 for each hour of the day. In the 2040 design year, the loudest hour analysis demonstrated that traffic conditions for the hour from 1:00 p.m. to 2:00 p.m. consistently generated the highest noise levels throughout the corridor. In the 2013 Existing case, the hour starting at 12:00 noon was consistently the loudest. Therefore, the traffic for those hours was used for all roadways in the separate analyses for the 2040 Build and 2013 Existing cases.

Appendix B provides the traffic data for the roadways used in the TNM modeling for this project.

3.5 Predicted Noise Levels and Impact

The study area includes residential and some recreational land use adjacent to project roadways. Each receptor represented exterior noise-sensitive land use.

All noise levels computed were the A-weighted equivalent sound level, or L_{eq}, in dBA. Loudest-hour noise levels were computed for the 2013 Existing case and the design-year 2040 Build alternative. Table 4 summarizes the noise impact and ranges of predicted noise levels by CNE. Table 5 provides the total number of impacted receptors by FHWA Activity Category.

Appendix F provides a table that lists the computed sound levels at all of the receptors; the individual barrier reports in Appendix D include tables listing computed sound levels for Barriers D and F . In both appendices, 2040 Build sound levels are shown without and with-a barrier, along with barrier insertion loss values for all receptors where noise abatement was evaluated.

Each receptor location in Figure 1 and in the figures that accompany the individual barrier reports in Appendix D is shown with a color-coded dot that indicates the status of each receptor according to its 2040 Build noise level with and without a noise barrier. The color code and corresponding receptor status are as follows:

- Light blue – impacted (without noise barrier) and 5 or 6 dBA of insertion loss (with noise barrier)
- Dark blue – impacted (without noise barrier) and 7 dBA of insertion loss (with noise barrier)
- Red – impacted (without noise barrier) and not benefited, i.e. less than 5 dBA of insertion loss (with noise barrier)
- Green – not impacted (without noise barrier) and benefited (with noise barrier)
- Yellow – not impacted (without noise barrier) or benefited (with noise barrier).

Table 4 Summary of Noise Impact and Ranges of Predicted Noise Levels by CNE

CNE	FHWA Activity Category	Number of Receptors* Exposed to Noise Impact		Range of Predicted Traffic Noise Levels, dBA L_{eq}	
		2013 Existing	2040 with Project	2013 Existing	2040 with Project
A	B and C	0	0	49 - 63	51 - 64
C	B and C	4	10	57 - 68	59 - 70
D	B, C, D and E	4	5	41 - 72	44 - 73
E	E	0	0	55 - 64	57 - 67
F	B	29	43	51 - 76	53 - 78
FH South**	B and C	0**	0	43 - 61**	46 - 64**
FH North**	B, C and D	8**	14	39 - 74**	42 - 77**
G	C and E	3	3	62 - 74	64 - 76
H	B	2	2	61 - 68	61 - 71
I	B	2	7	62 - 73	65 - 75
J	B	4	6	60 - 71	61 - 73
K	B	2	3	65 - 72	66 - 75
L	D and E	0	0	44 - 58	46 - 60
M	E	0	0	66 - 67	69 - 69
N	C	4	4	64 - 69	63 - 70
Total		**54**	**97**		

* Residential or recreational receptors.
** CNEs FH South and FH North are located behind existing noise barriers.
Source: HMMH, 2019.

Table 5 Number of Impacted Units by FHWA Activity Category

Alternative	Impact Type	Number of Impacted Units by Land Use and FHWA Activity Category[1]				
		Residential Exterior (B)	Recreational Exterior (C)	Institutional Interior (D)	Commercial Exterior (E)	Total
2013 Existing	NAC	48	13	0	1	62
2040 Build	NAC	81	14	0	2	97

[1.] The FHWA Activity Category is shown in parentheses
Source: HMMH, 2018.

4 SUMMARY OF FINAL NOISE BARRIER DESIGNS

Figure 1 (sheets 1 to 12) shows the locations of each of the barriers evaluated in detail in this study. Table 6 presents a summary of each barrier's acoustical design details, including location, benefited receptors, length, height range, surface area, total cost, surface area per benefited receptor, and whether the barrier was found to be cost-reasonable. The barriers shown in Table 6 are the most cost-effective noise barrier designs that were evaluated in this study. Appendix F provides a table that lists the computed sound levels at all of the receptors in Figure 1. In that table, 2040 Build sound levels are shown without and with a barrier, along with barrier insertion loss values for all receptors where noise abatement was evaluated.

Appendix D provides a detailed acoustical design report for the single noise barrier identified as feasible and reasonable (Potential Noise Barrier F) to be constructed as part of this project. The acoustical design report includes a figure showing the potential noise barrier in plan view, the extent of the CNE, the noise measurement locations, and all of the noise receptor locations, which are color coded as to their noise level and benefit categories. The acoustical design report also provides the predicted Design Year noise levels (with and without the noise barrier) and noise barrier insertion loss at each receptor location, as well as the physical characteristics of the noise barrier, such as its surface area, height, estimated ground elevation, and top-of-wall elevation.

Potential Noise Barrier F will be constructed as part of the current project, pending FHWA and VDOT review, as well as community support. However, the final design and the feasibility and reasonableness determination for Potential Noise Barriers C and FH South will be deferred to the I-95 Northbound C-D Lanes Project (UPC 105510).

Appendix H includes the Warranted, Feasible and Reasonable Worksheets for each of the noise barrier in Table 6.

4.1 Noise Barriers Found Not Reasonable

Noise Barrier D1 would be located on the southbound side of I-95, south of the Route 3 interchange, in Spotsylvania County. This noise barrier was evaluated to mitigate noise impacts at the New Life in Christ Church in the southern portion of CNE D, specifically two impacted recreational receptors associated with the baseball field and one recreational receptor associated with the playground. Noise Barrier D1 would benefit all three recreational receptors, plus another two non-impacted recreational receptors on the baseball field, with noise reductions ranging from 5 to 7 decibels and an average noise reduction of 5.9 decibels. The barrier meets both the acoustical feasibility goal and the noise reduction goal. The noise barrier would be 9 to 24 feet high and 737 feet long with a surface area of 10,036 square feet. The barrier is not reasonable since it has a surface area per benefited receptor (SF/BR) value of 2,007, which exceeds VDOT's maximum SF/BR of 1,600. Noise Barrier D1 is shown on Sheet 3 of 13 in Figure 1.

The evaluation also considered extending Noise Barrier D1 to the south to benefit the impacted single-family home on Burgess Lane. At a height of 14 to 20 feet and a length of 1,322 feet, the noise barrier would have a surface area of 22,574 square feet and would benefit the four impacted receptors (three recreational receptors plus one residential receptor) and two additional non-impacted recreational receptors, with noise reductions ranging from 6 to 7 decibels and an average noise reduction of 5.6 decibels. However, the barrier is not reasonable since it has a SF/BR value of 3,762, which exceeds the maximum SF/BR allowed by VDOT policy.

Table 6 Summary of Barrier Characteristics

Barrier ID	Barrier Details						Total Number of Impacted Receptors	Impacted and Benefited Receptors	Non-Impacted and Benefited Receptors	Total Number of Benefited Receptors	Surface Area per Benefited Receptor (SF/BR)	Barrier Status*
	Noise Reduction (dB)		Length (feet)	Range of Heights (feet)	Surface Area (sq-ft)	Total Cost at $42/sq-ft						
	Range	Avg.										
C**	5 to 10	6.0	1,609	15	24,140	$1,013,880	10	10	6	16	1,509	F&R**
D1	5 to 7	5.9	737	9 to 24	10,036	$421,512	3	3	2	5	2,007	F&NR
D2	5 to 7	5.9	561	16	8,970	$376,740	1	1	1	2	4,485	F&NR
F***	5 to 12	8.0	1,181	16 to 18	20,427	$857,934	38***	38	16	54	378	F&R
FH-N Ext**	5 to 10	6.4	404	16	6,466	$271,572	10	8	3	11	588	F&R**
G	7	7	685	12 to 14	8,768	$368,256	1	1	0	1	8,768	F&NR
H	5	5	748	30	22,424	$941,808	2	1	0	1	22,424	F&NR
I	5 to 12	7.5	1,732	20	34,639	$1,455,258	7	7	1	8	4,331	F&NR
J1/J2	5 to 9	7.1	3,049	18	54,861	$2,304,162	6	5	1	6	9,144	F&NR
K1	7	7	464	14	6,497	$272,874	1	1	0	1	6,497	F&NR
K2	5 to 8	6.1	1,829	20	36,599	$1,537,158	2	2	0	2	18,300	F&NR
N	5 to 8	6.4	826	20	16,557	$695,394	6	6	0	6	2,760	F&NR

Source: HMMH, 2019

* Barrier Status: F & R – Feasible and Reasonable; F & NR – Feasible and Not Reasonable; NF – Not Feasible.

** These are preliminary designs for Potential Noise Barriers C and FH North Extension. These barriers are located on the northbound side of I-95 and within the study area for the I-95 Northbound C-D Lanes Project. As a result, the final designs for Barriers C and FH North Extension will be evaluated as part of that project.

*** The impacted receptors include 38 apartment units in the Hamptons at Noble. One apartment building has 4th floor units that are above the point-of-intersection with a 30-foot high noise barrier wall. Four of the 4th floor units would be exposed to noise impact and are included in the counts of Tables 4 and 5. Consistent with VDOT policy, only units on the 3rd floor and *below* were considered for the feasibility and reasonableness determination. Therefore, these four units are excluded from the "Total Number of Impacted Receptors" column shown in this table. Note that a noise barrier ranging in height from 22 to 24-foot would benefit these 4th floor units and would meet VDOT's 1,600 SF/BR criterion for reasonableness.

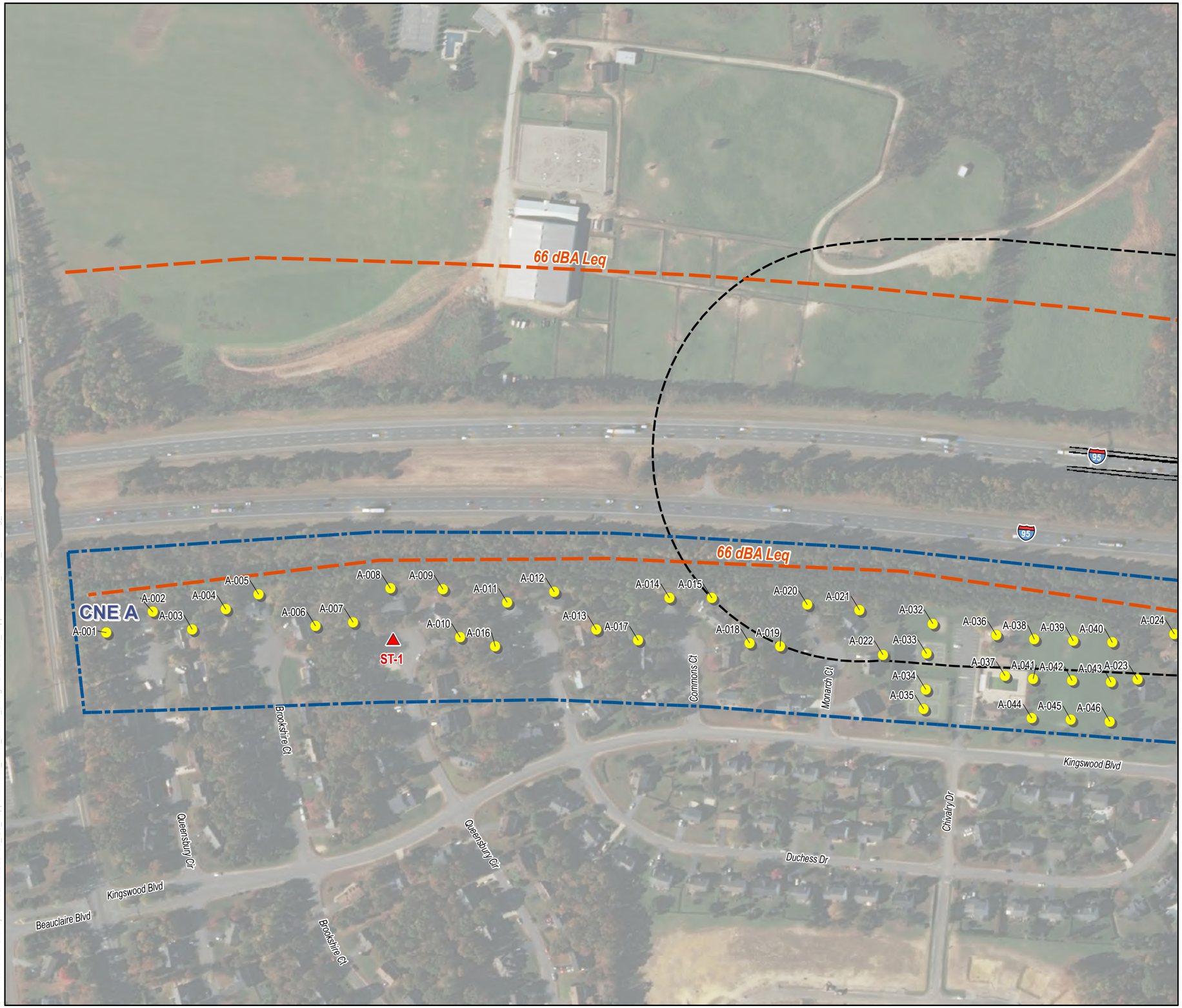

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Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 1 of 13

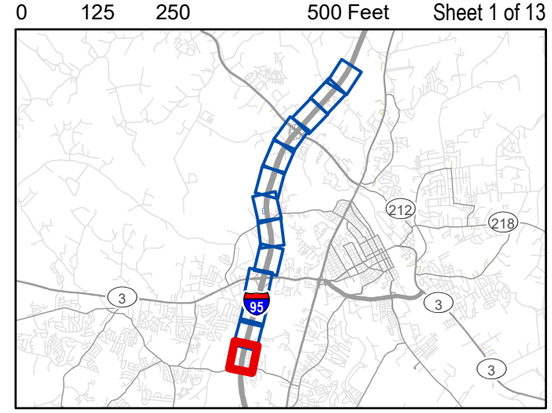

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Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

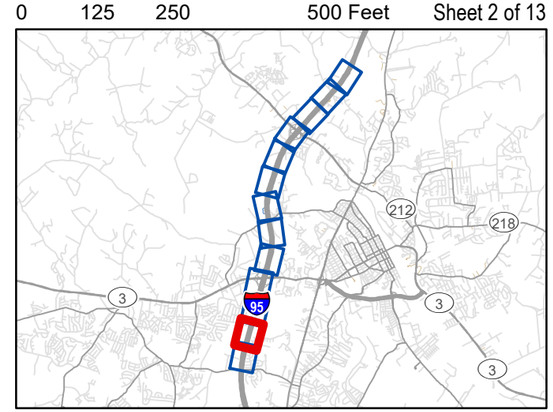
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 2 of 13



HMMH

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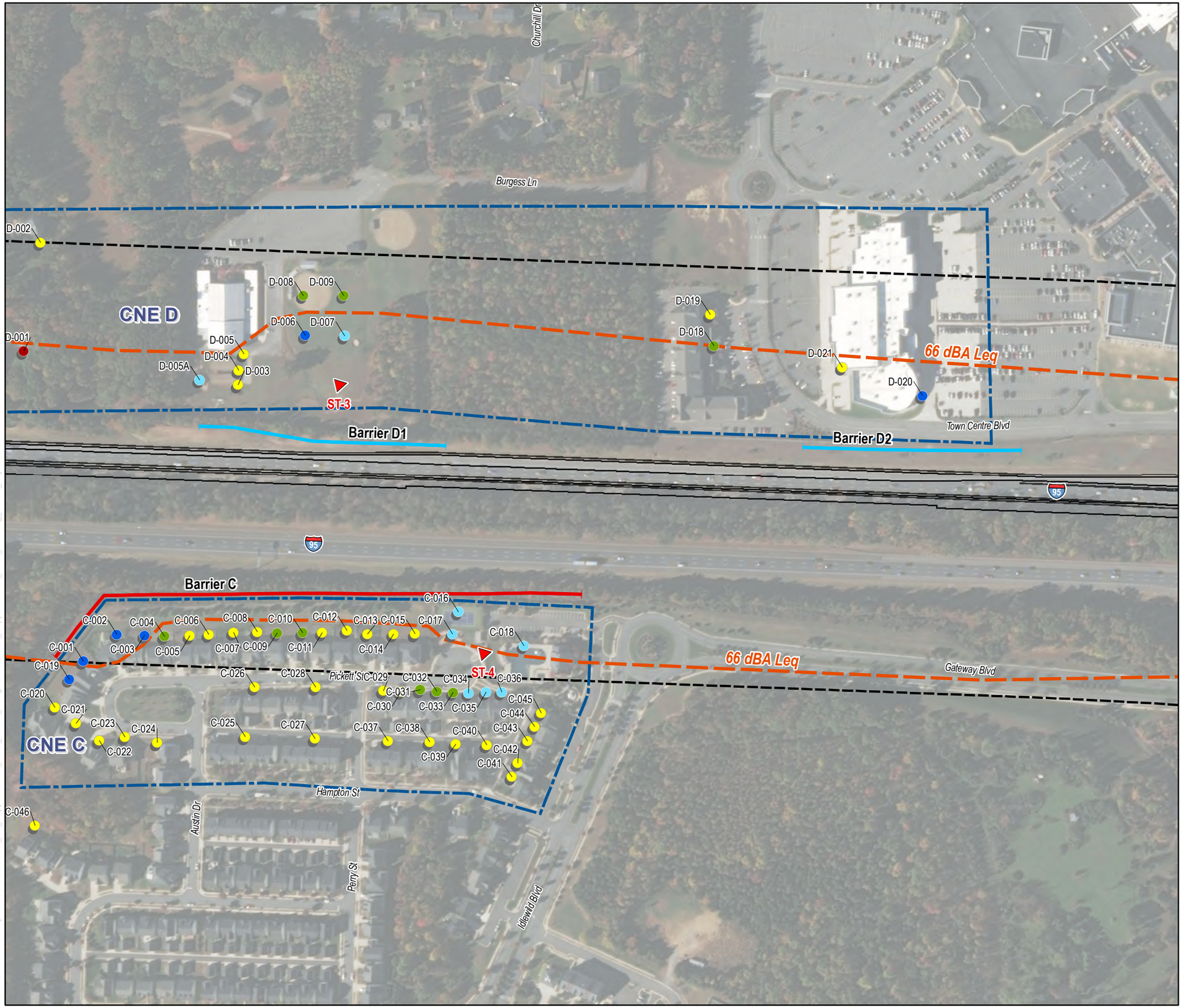

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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors
- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

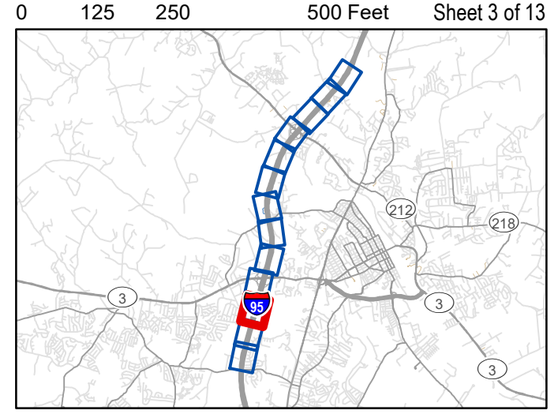
Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 3 of 13



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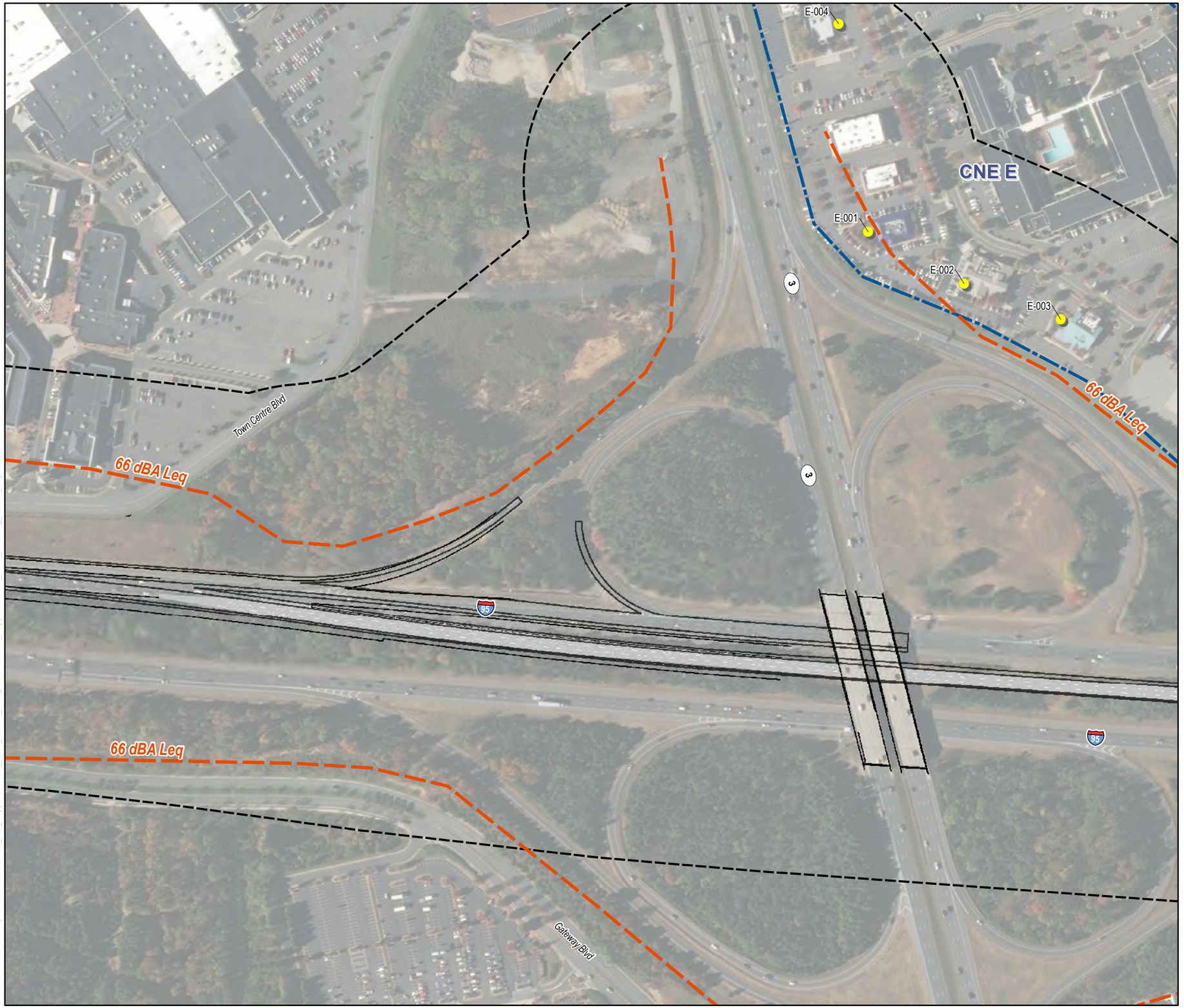

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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

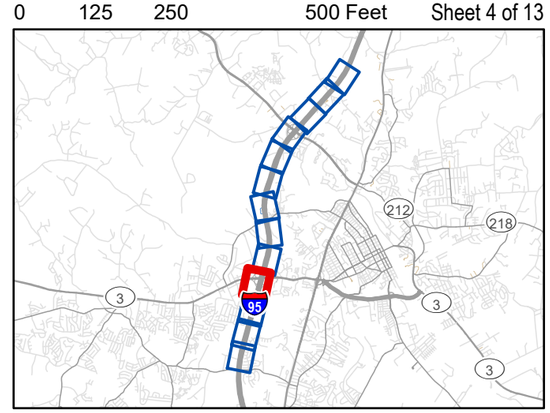
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

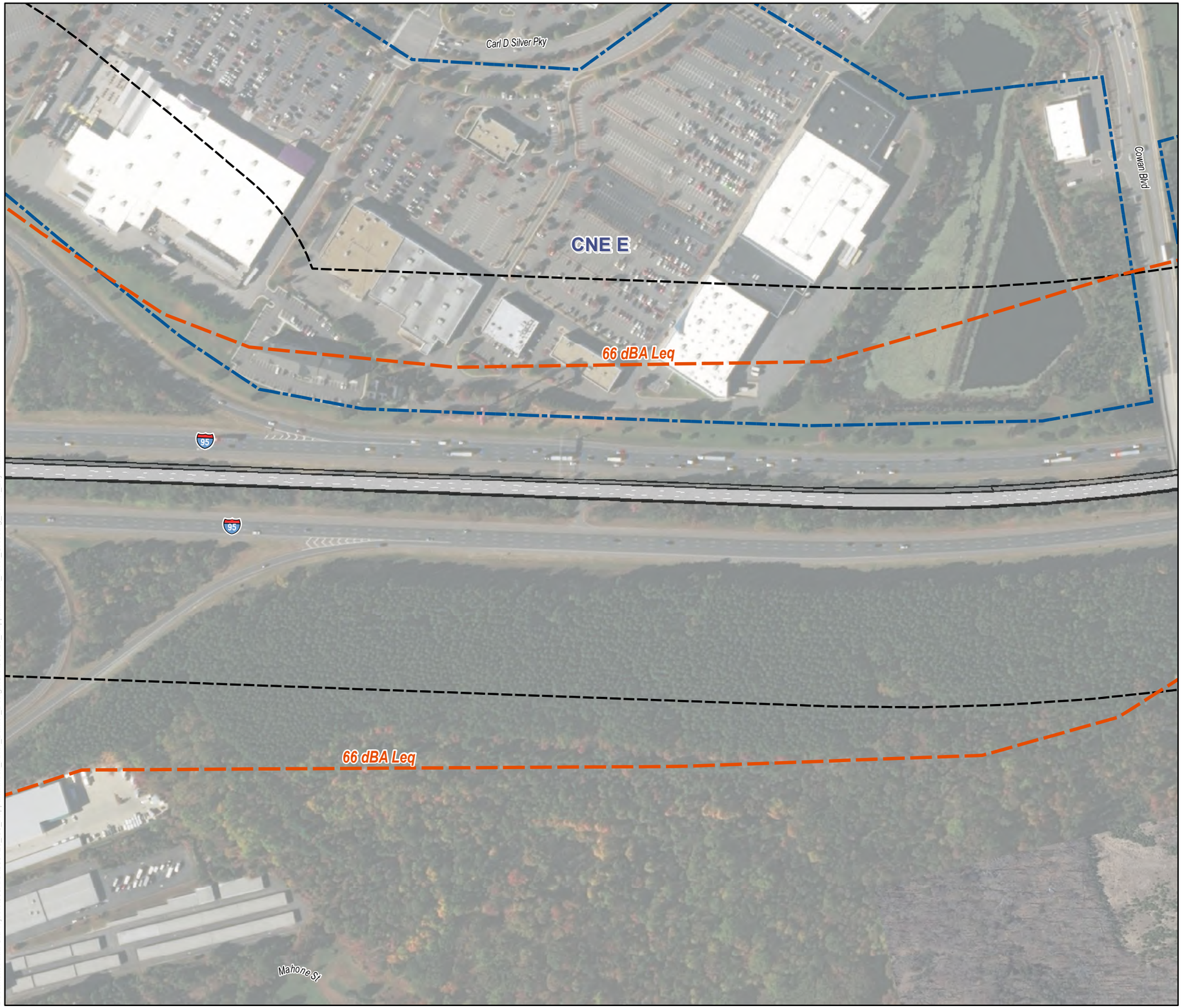
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 4 of 13



U.S. Department of Transportation Federal Highway Administration



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VDOT Virginia Department of Transportation

Figure 1
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Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

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- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

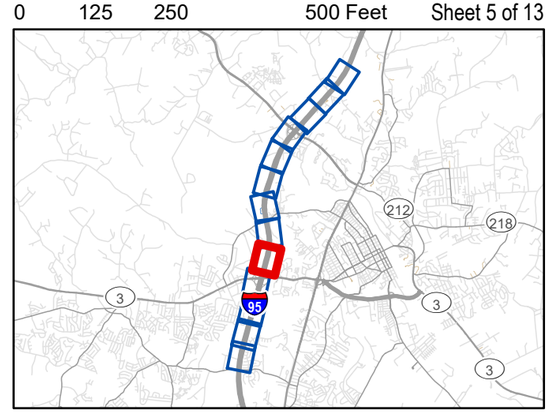
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 5 of 13



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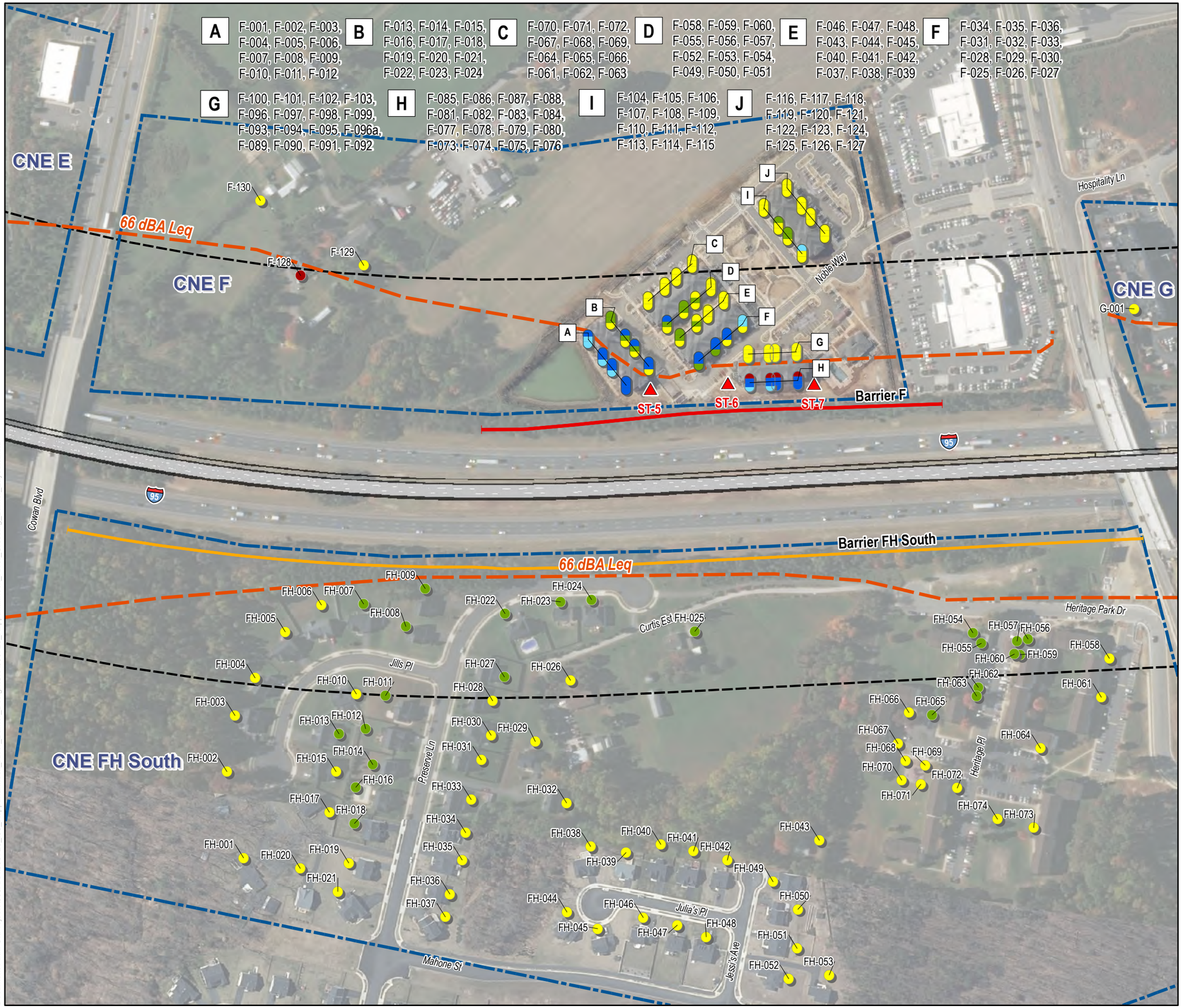

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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes Design-Build Project
(UPC 101595)

Receptors
- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

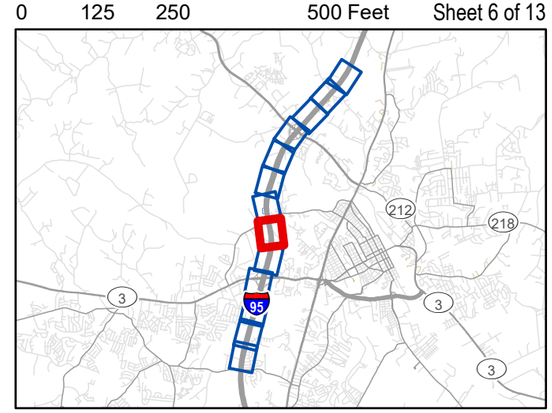
Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

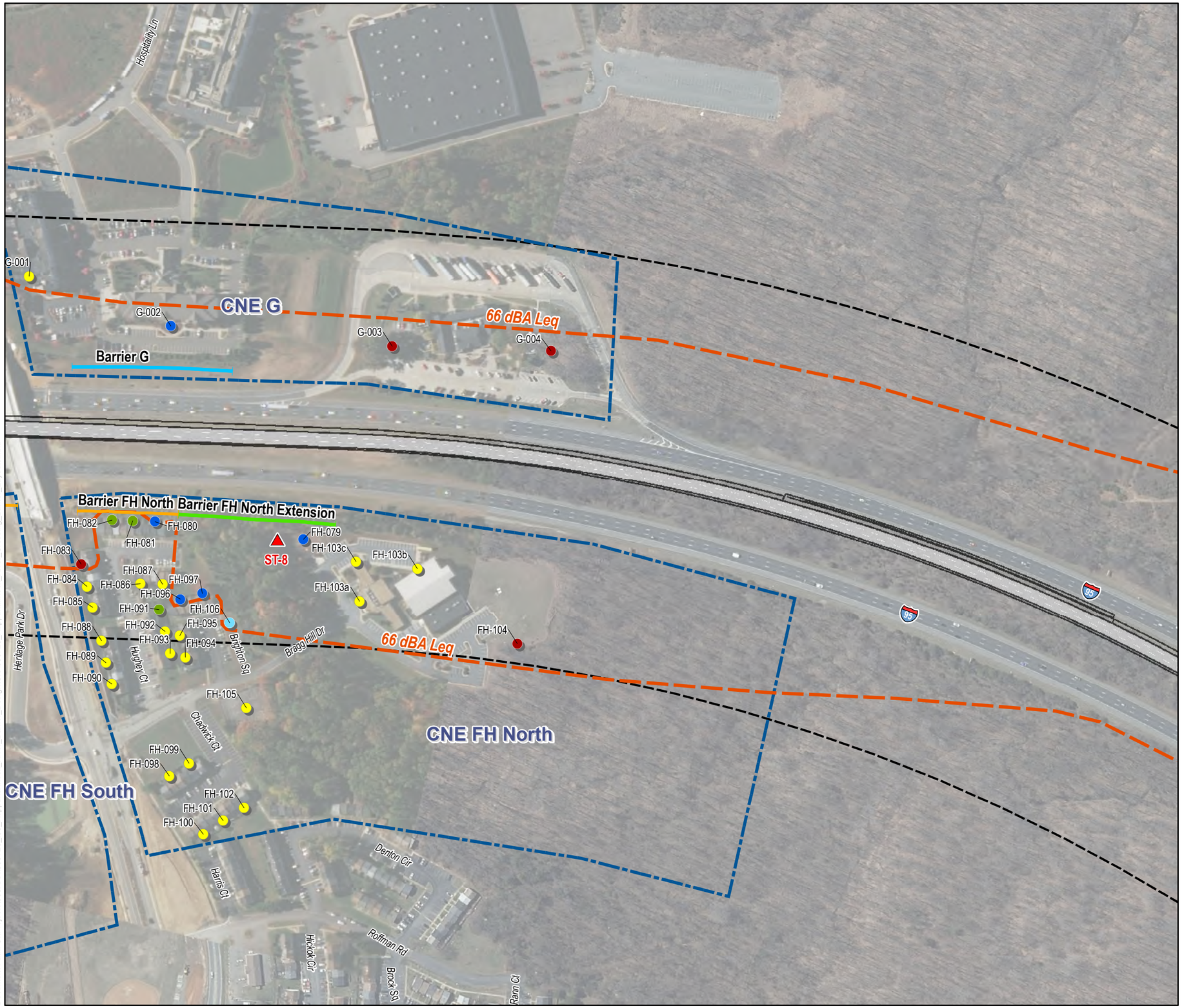
Noise Barriers
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 6 of 13



U.S. Department of Transportation Federal Highway Administration



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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

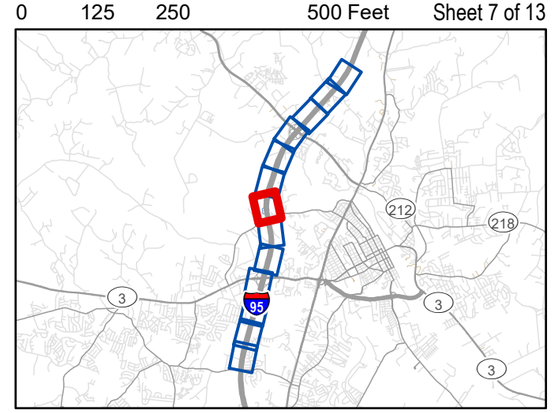
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 7 of 13



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Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes Design-Build Project
(UPC 101595)

Receptors
- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

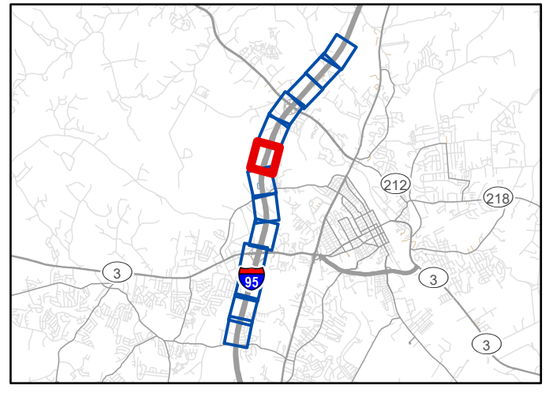
Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 8 of 13



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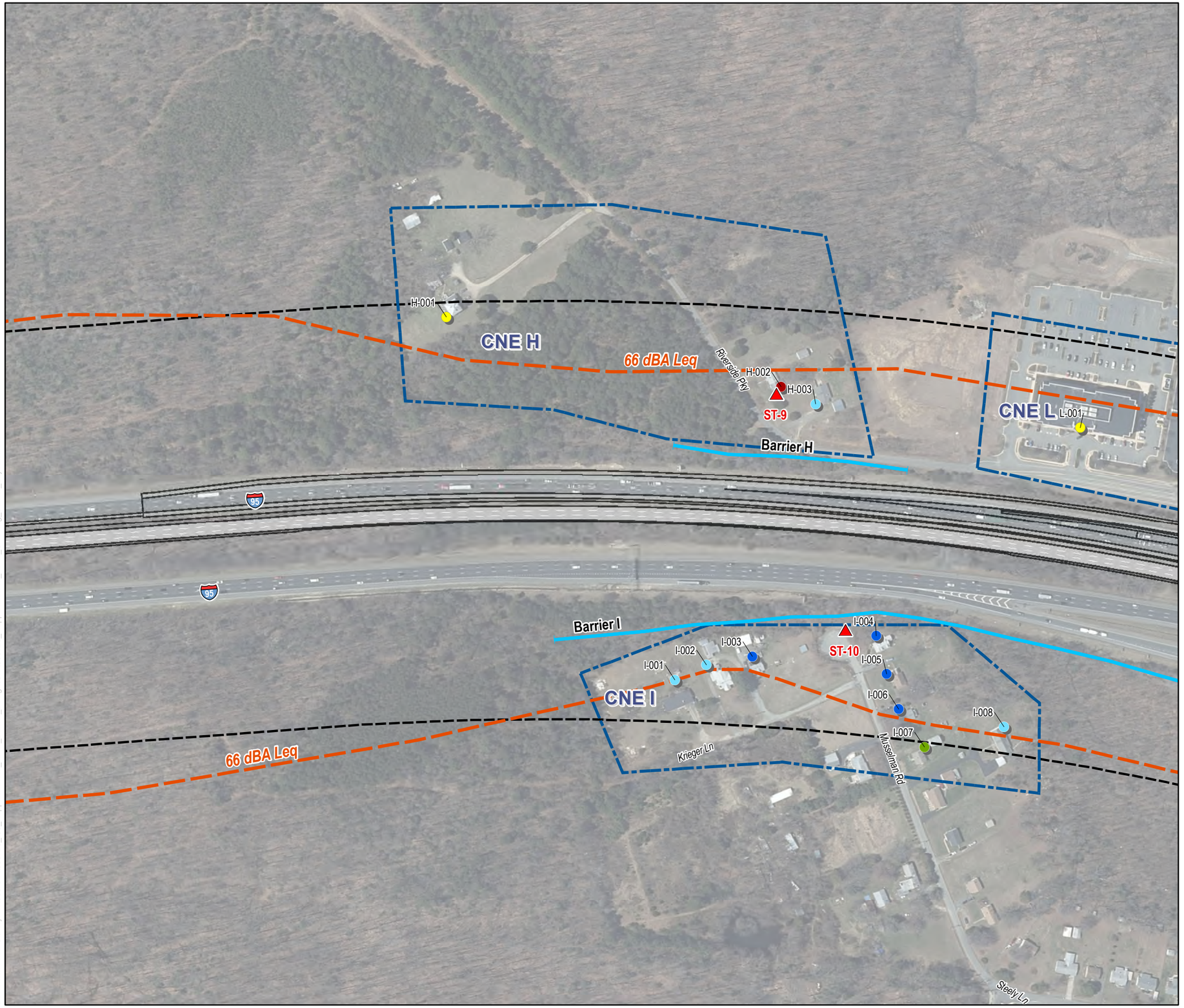
U.S. Department of Transportation
Federal Highway Administration



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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

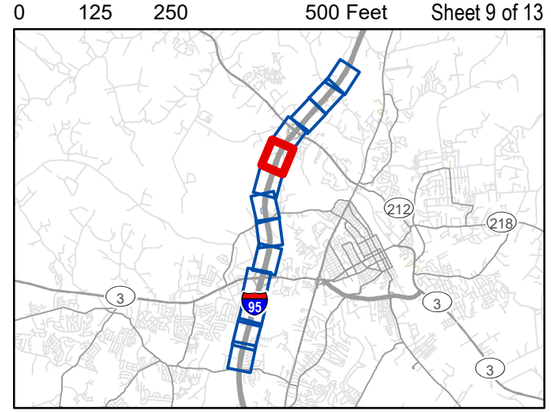
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 9 of 13



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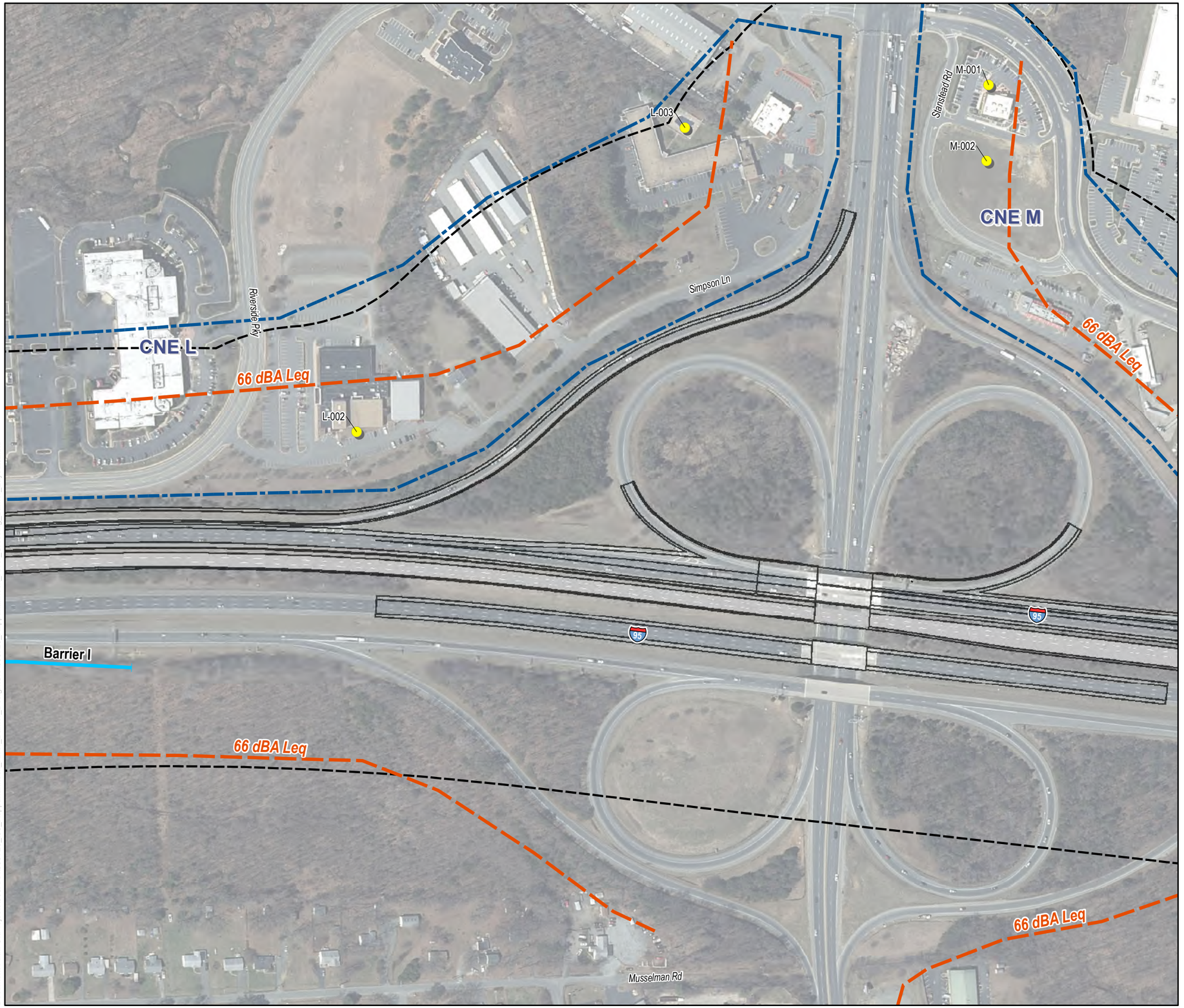

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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

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- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

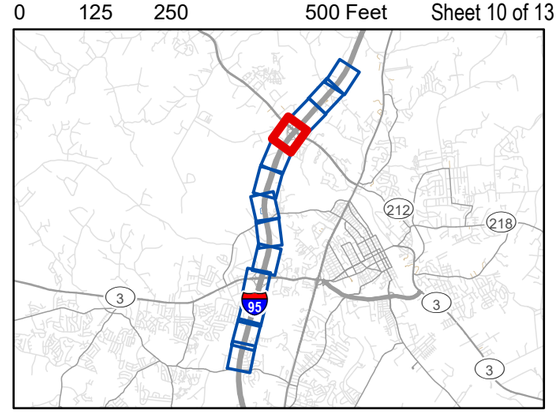
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 10 of 13



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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors

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- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

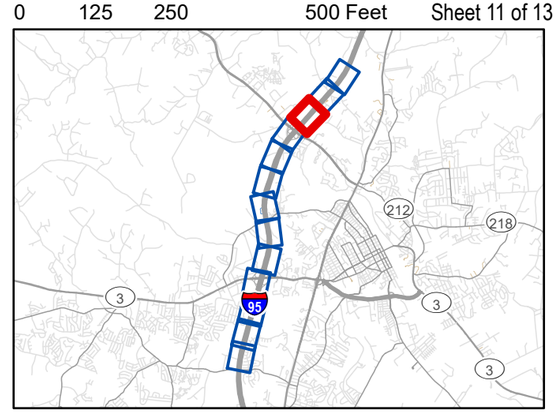
- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers

- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 11 of 13



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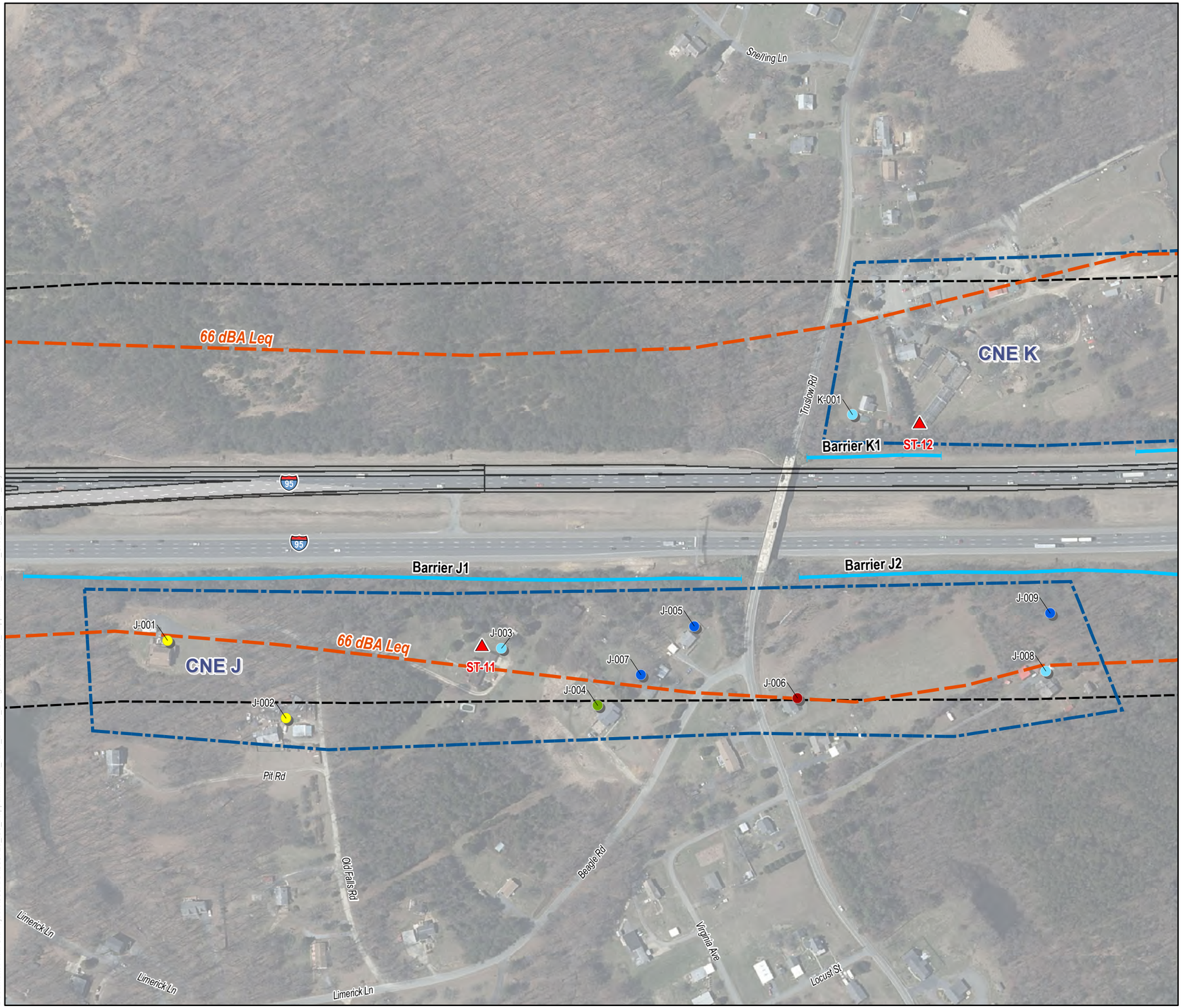

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VDOT Virginia Department of Transportation

Figure 1
Location Map for Common Noise Environments, Receptors, and Barriers

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors
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- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
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- Not Benefited or Impacted

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

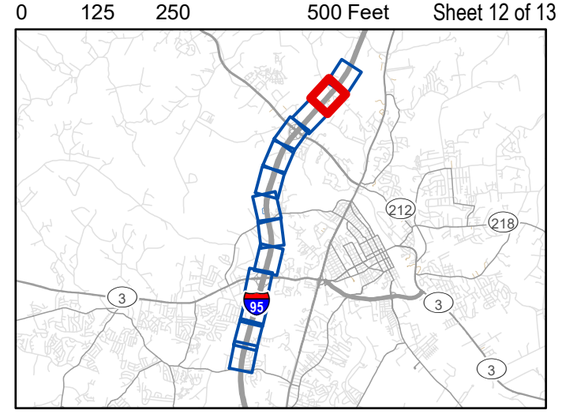
Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 12 of 13



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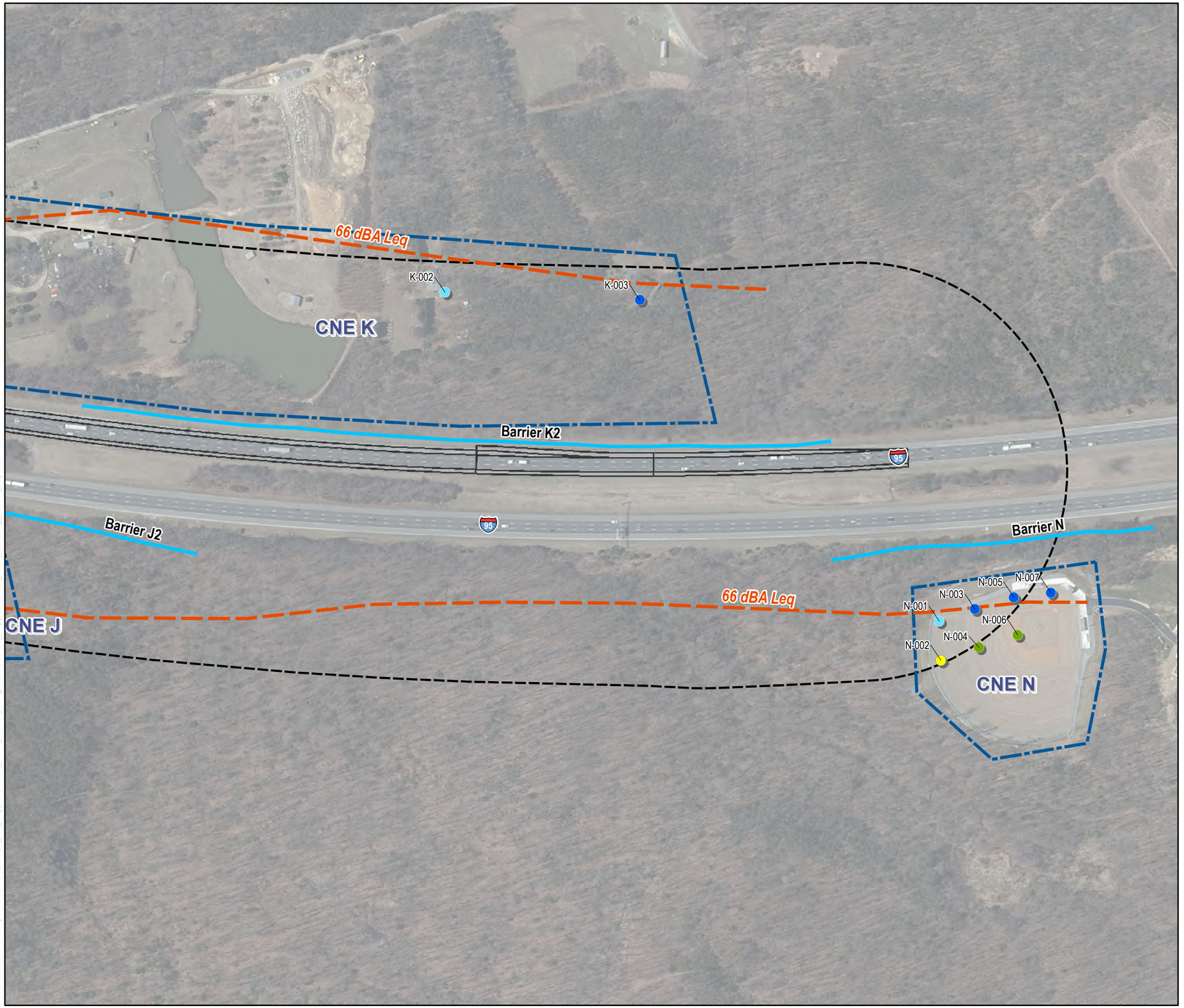

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VDOT Virginia Department of Transportation

Figure 1
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Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

Receptors
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- Benefited but Not Impacted
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Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

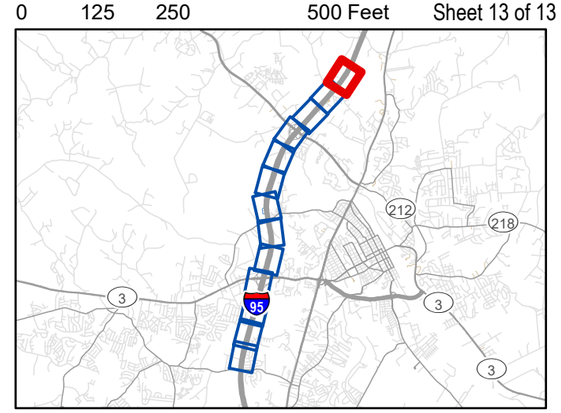
Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas
- 66 dBA Contour
- 500-Foot Buffer

Noise Barriers
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Existing Barrier to Remain
- Barrier Extension

0 125 250 500 Feet

Sheet 13 of 13



hmmh

U.S. Department of Transportation Federal Highway Administration

The evaluation of Noise Barrier D1 also considered an independent noise barrier to benefit only the single-family home on Burgess Lane. At a height of 24 feet and length of 617 feet, the potential noise barrier was not able to achieve the noise reduction goal of 7 dBA at the single-family home, and so was not reasonable. In order to benefit the residence, the noise barrier would have to extend as far north as the New Life in Christ Church.

Activity Category D receptors also were modeled for the two satellite buildings and the church's main building. Based on an outdoor-to-indoor level reduction of 25 dB, interior noise levels would be below the FHWA NAC for Activity Category D, and so no interior noise impacts are predicted.

Noise Barrier D2 would be located on the southbound side of I-95, south of the Route 3 interchange, in Spotsylvania County. This noise barrier was evaluated to mitigate a noise impact in the northern end of CNE D, specifically at an outdoor patio associated with a bowling alley. The noise barrier would be 16 feet high and 561 feet long, with a surface area of 8,970 square feet. Noise Barrier D2 would provide 7 decibels of noise reduction at the impacted receptor and 5 decibels of noise reduction at a non-impacted pool associated with a hotel, for an average noise reduction of 5.9 decibels. While the barrier meets the acoustical feasibility and the noise reduction goals, with a SF/BR value of 4,485, the noise barrier is not reasonable. Noise Barrier D2 is shown on Sheet 3 of 13 in Figure 1.

Noise Barrier G would be located along the southbound side of I-95 just north of the Fall Hill Avenue overpass. This noise barrier was evaluated to mitigate noise impact at a single commercial receptor associated with a pool at a hotel. At a height of 12 to 14 feet and a length of 685 feet, the barrier would have a surface area of 8,768 square feet. Noise Barrier G would provide 7 decibels of noise reduction at the single impacted receptor – meeting both the acoustical feasibility and noise reduction goals. However, with a SF/BR value of 8,768, the noise barrier is not reasonable. Noise Barrier G is shown on Sheet 7 of 13 in Figure 1.

Noise impact also is expected to occur at two picnic areas in CNE G that are located at the Virginia Welcome Center on the southbound side of I-95. As documented in the preliminary noise study,[17] VDOT does not desire a noise barrier the Virginia Welcome Center. As a result, noise abatement for these picnic areas was not evaluated in this study.

Noise Barrier H would be located along the southbound side of I-95 south of the Route 17 interchange in Stafford County to mitigate predicted noise impacts at two residences in CNE H. At a height of 30 feet and a length of 1,515 feet, the barrier would have a surface area of 45,441 square feet, while providing 5 decibels of noise reduction at only one of the impacted receptors and 6 decibels of noise reduction at a non-impacted residence. While the acoustical feasibility goal is achieved, Noise Barrier H does not meet the noise reduction goal, even at the maximum height of 30 feet and a length of 1,515 feet. Furthermore, the design presented herein does not meet VDOT's cost-effectiveness criteria of 1,600 SF/BR.

A shorter length noise barrier also was evaluated for CNE H that only considers Receptors H-002 and H-003, which are impacted by the project. At a height of 30 feet and a length of 748 feet, Barrier H would have a surface area of 22,424 square-feet. This design would provide noise reductions of 3 and 5 decibels at receptors H-002 and H-003, respectively. While the acoustical feasibility goal is met, since 50% of the impacted receptors would receive a benefit, the noise reduction goal is not met, as was the case with the 1,515-foot long design. In addition, the 748-foot long design exceeds

[17] See footnote 1.

VDOT's cost-effectiveness criteria of 1,600 SF/BR. The shorter length design for Barrier H is not reasonable. Barrier H is shown on Sheet 9 of 13 in Figure 1 at a length of 748 feet.

Noise Barrier I would be located along the northbound side of I-95 south of the Route 17 interchange in Stafford County. At a height of 20 feet and a length of 1,732 feet, the barrier would have a surface area of 34,369 square feet, while benefiting seven impacted residences and one non-impacted residence. Noise Barrier I would provide 5 to 12 decibels of noise reduction (7.5-decibel average noise reduction), meeting the acoustical feasibility and noise reduction goals. However, with a SF/BR value of 4,331, the noise barrier is not reasonable. Other barrier designs of shorter length did not benefit receptors I-001 and I-008. Noise Barrier I is shown on Sheets 9 and 10 of 13 in Figure 1.

Noise Barrier J1/J2 is a system of two noise barriers located along the northbound side of I-95 north of the Route 17 interchange in Stafford County. This barrier system was evaluated to mitigate noise impact at five single-family residences and at one Activity Category C receptor, which is located in a cemetery. Noise Barrier J1 – with a height of 18 feet and a length of 1,839 feet – and Noise Barrier J2 – also with a height of 18 feet and a length of 1,210 feet – would have a combined surface area of 54,861 square feet. The barrier system provides 5 to 9 decibels of noise reduction at four of the five impacted residences and 8 decibels of noise reduction at the impacted receptor at the cemetery – for an average noise reduction of 7.1 decibels. While this barrier meets the acoustical feasibility and noise reduction design goals, it does not benefit the impacted residence represented by receptor J-006, which is located adjacent to the gap in the two-barrier system. The gap is required for the Truslow Road overpass. With a SF/BR value of 9,144, this noise barrier is not reasonable. Noise Barrier J1/J2 is shown on Sheets 12 and 13 of 13 in Figure 1. Noise Barrier J1 and J2 were also evaluated independently of one another, as follows:

- Noise Barrier J1 would benefit all three of the impacted residences located behind it, as well as one non-impacted residence. Noise Barrier J1 would provide 6 to 9 decibels of noise reduction, for an average noise reduction of 7 decibels, meeting both the acoustical feasibility and noise reduction goals. At a height of 18 feet and a length of 1,839 feet, this noise barrier would have a surface area of 33,102 square feet. However, with a SF/BR value of 8,270, Noise Barrier J1 is not reasonable.

- Noise Barrier J2 would benefit two out of the three impacted receptors located behind it – a residence represented by receptor J-008 and the cemetery represented by receptor J-009. One impacted receptor – J-008 – would only 3 decibels of noise reduction from Noise Barrier J2. Noise Barrier J2 would provide 5 to 8 decibels of noise reduction at the benefited properties, for an average noise reduction of 6.6 decibels, meeting both the acoustical feasibility and noise reduction goals. At a height of 18 feet and a length of 1,210 feet, this noise barrier would have a surface area of 21,783 square feet. However, with a SF/BR value of 10,892, Noise Barrier J1 is not reasonable.

Noise Barrier K1 would be located along the southbound lanes of I-95 north of the Route 17 interchange in Stafford County. Noise Barrier K1 benefits a single impacted residence located on Truslow Road (Receptor K-001) with a noise reduction of 7 decibels, thereby meeting the acoustical feasibility and noise reduction design goals. At a height of 14 feet and a length of 464 feet, this barrier would have a surface area of 6,497 square feet. With a SF/BR value of 6,497, this noise barrier is not reasonable. Noise Barrier K1 is shown on Sheet 12 of 13 in Figure 1.

Noise Barrier K2 would be located along the southbound lanes of I-95 north of the Route 17 interchange in Stafford County. Noise Barrier K2 benefits a two impacted residences located north of

Truslow Road with noise reductions ranging from 5 to 8 decibels, thereby meeting the acoustical feasibility and noise reduction design goals. This barrier provides an average noise reduction of 6.1 decibels. At a height of 20 feet and a length of 1,829 feet, Noise Barrier K2 would have a surface area of 36,599 square feet. With a SF/BR value of 18,300, this noise barrier is not reasonable. Noise Barrier K2 is shown on Sheet 13 of 13 in Figure 1.

Noise Barriers K1 and K2 also were evaluated as a system of noise barriers; however, the barrier system also was found to be not reasonable.

Noise Barrier N would be located along the northbound lanes of I-95 north of the Route 17 interchange and in the vicinity pf the northern project limit in Stafford County. This barrier benefits four impacted recreational receptors on the southern baseball field (Field 1) at Chichester Park with 5 to 9 decibels of noise reduction, thereby meeting the acoustical feasibility and noise reduction goals. This noise barrier also benefits two non-impacted recreational receptors on the baseball field. The barrier provides an average noise reduction of 6.4 decibels. At a height of 20 feet and a length of 826 feet, Noise Barrier N would have a surface area of 16,557 square feet. This noise barrier is not reasonable, since it has a SF/BR value of 2,760, which exceeds VDOT's criteria. Noise Barrier N is shown on Sheet 13 of 13 in Figure 1.

4.2 Existing Noise Barriers

Noise Barrier FH South is located on the northbound side of I-95 south of Fall Hill Avenue and north of Cowan Boulevard in the City of Fredericksburg. Existing noise-sensitive land use behind Noise Barrier FH South consists of residences, outdoor seating areas, a courtyard, a playground, a volleyball court and a basketball court. This existing noise barrier was constructed and completed in 2017 as part of the I-95 Safety Improvements Project (UPC 107715). This existing noise barrier would not be impacted by the construction of the project and so would remain in place. No noise impact is predicted to occur in the community behind this noise barrier as a result of the project. Predicted noise levels behind Noise Barrier FH South would range from 46 to 64 dBA L_{eq} with the 2040 Build alternative. Noise Barrier FH South is shown on Sheet 6 of 13 in Figure 1. Appendix F provides a table of predicted noise levels for each receptor that had been included in the noise model.

Noise Barrier FH North is located on the northbound side of I-95 north of Fall Hill Avenue in the City of Fredericksburg. Existing land use consists of the Hughey Court townhomes and the Bragg Hill Family Center. This existing noise barrier is 260 feet long and was constructed as part of the Fall Hill Avenue Widening Project (UPC 88699). Noise impact is expected to occur for some residential receptors behind Noise Barrier FH North. Therefore, this existing barrier was evaluated according to VDOT's policy in such cases, which requires that the existing barrier be evaluated to determine if it meets VDOT's feasibility and reasonableness requirements. In particular, at least 50 percent of the receivers impacted without the barrier in place must be benefited with five decibels of noise reduction by the existing barrier, and at least one receptor must achieve the noise reduction design goal of seven decibels. Existing Noise Barrier FH North was evaluated in this manner, and was found to not meet the acoustical feasibility goal.

The evaluation of the existing noise barrier considered only those receptors behind it, i.e. the townhomes, playground and tennis courts in the Hughey Court development. Without the existing noise barrier in place, a total of 19 residential and recreational units would be exposed to noise impact with the 2040 Build alternative. The existing Noise Barrier FH North would benefit only nine of the 19 impacts – or 47% of the impacted receptors. Because fewer than 50% of the impacted receptors would receive 5 dBA, or more, of noise reduction, the barrier is not feasible. Consequently, HMMH considered noise abatement measures to mitigate these impacts.

As shown on Sheet 7 of 13 in Figure 1, receptors FH-096, FH-097 and FH-106 would be exposed to noise impact as a result of the project. These receptors are located in the northern end of the Hughey Court development and beyond the northern terminus of Noise Barrier FH North. To benefit these receptors, the existing noise barrier would have to extend northward, at which point the northern endpoint of an extended Noise Barrier FH North would begin to "overlap" an impacted playground at the Bragg Hill Community Center. As a result, the extension to Barrier FH North also considers the playground.

Per VDOT policy, when an existing noise barrier is not physically impacted by the project but the project creates noise impacts that the existing noise barrier does not completely address, any modifications to, or replacement of, the noise barrier would be subject to the cost-effectiveness criterion. In this case, only the incremental square footage to extend the existing noise barrier to the north and only the additional benefited receptors would be considered in the reasonableness determination.

If Barrier FH North were extended to the north at a height of 16 feet and for a length of 404 feet, the incremental amount of barrier would benefit nine additional townhomes in Hughey Court (Receptors FH-091, FH-096 and FH-097). Six of the nine townhomes are exposed to noise impact and three of the impacted townhomes would receive a noise reduction of 7 decibels. The additional noise barrier also would benefit two recreational receptors – the playground at Hughey Court (with 6 decibels of noise reduction) and the playground at the Bragg Hill Community Center (with 10 decibels of noise reduction). The barrier extension would have a surface area of 6,466 square feet and benefit 11 receptors. With a SF/BR value of 588, the extension to Noise Barrier FH North is reasonable.[18]

Normally as part of a final design study and after such a determination has been made, VDOT would survey the affected property owners and residents to solicit their viewpoints about the proposed noise barrier and whether they support barrier construction. However in this situation, the pending I-95 Northbound Rappahannock River Crossing Project (UPC 105510) may affect the requirements for noise abatement in this community. As a result, the final design for Noise Barrier FH North will be reevaluated as part of that project's final design with the community survey taking place at that time, as necessary. The anticipated completion of the design study for the northbound project is early-2021.

Appendix D includes design details for Noise Barrier FH North Extension. Appendix I provides a copy of a notification letter will be mailed to the benefited receptors behind Noise Barrier FH North.

4.3 Noise Barriers Found Feasible and Reasonable

Noise Barrier C is located along the northbound side of I-95 south of the Route 3 interchange. Noise abatement is warranted for CNE C since traffic noise impact is predicted to occur at seven residences in the Village of Idlewild and three recreational receptors at the community center as a result of the proposed project. The noise barrier would be 15 feet high and 1,609 feet long, with a surface area of 24,140 square feet. Noise Barrier C would provide 5 to 10 decibels of noise reduction at all of the impacted receptors, thereby meeting both the acoustical feasibility and noise reduction

[18] There is an additional exterior activity area on the north side of the Bragg Hill Community (a seating area represented by Receptor FH-104). An extension to pick up an additional benefit at this receptor location did not meet the cost-effectiveness criterion. Activity Category D receptors also were modeled for the Bragg Hill Community Center. Based on an outdoor-to-indoor level reduction of 25 dB, interior noise levels would be below the FHWA NAC for Activity Category D.

design goals. The barrier also would benefit six non-impacted residences, while providing an average noise reduction of 6 decibels (averaged over the benefited receptors). The noise barrier meets the cost-effectiveness criterion at 1,509 SF/BR and so is considered reasonable. Noise Barrier C is shown on Sheet 3 of 13 in Figure 1.

As discussed in the previous section for Noise Barrier FH North, the final design for Noise Barrier C will be reevaluated as part of the final design study for the pending I-95 Northbound Rappahannock River Crossing Project (UPC 105510). The community survey also would take place at that time, as necessary.

Appendix D provides design details for Noise Barrier C. Appendix I provides a copy of a notification letter that had been mailed to the benefited receptors behind Noise Barrier C.

Noise Barrier F is located along the southbound side of I-95 just south of Fall Hill Avenue. Noise abatement is warranted for CNE F since traffic noise impact is predicted to occur at a total of 38 units in the Hamptons at Noble apartment complex as a result of the proposed Project in the design-year (2040). Noise Barrier F would have a total length of 1,181 feet, range in height from 16 to 18 feet, and have a surface area of 20,427 square feet. It would benefit a total of 38 apartments with ground floor patios and/or balconies.[19] All of the eligible apartments exposed to noise impact would receive at least 5 decibels of noise reduction from the noise barrier, thereby meeting VDOT's criteria for acoustical feasibility. A total of 29 units would receive noise reductions that exceed the design goal of 7 decibels. Another 16 non-impacted apartments also would be benefited by the barrier – for a total of 54 benefited residential receptors. At the benefited receptors, Potential Noise Barrier F would provide from 5 dBA to 12 dBA of noise reduction, with an average weighted insertion loss of 8.0 dBA. The resulting surface area per benefited receptor for Noise Barrier F would be 378 SF/BR, which is below VDOT's reasonableness criterion of 1,600 SF/BR.

The evaluation also considered extending the noise barrier to the south to benefit the impacted single-family home at 44 Briscoe Lane. Potential Noise Barrier F, as presented in this report, at a height of 16 to 18 feet and a length of 1,181 feet, would benefit all of the eligible impacted units in the Hamptons at Noble (i.e. those units on the ground floor and the second and third floors). Extending the noise barrier to the south at a height of 18 feet yields only 4 decibels of noise reduction at the single-family home. In order to benefit the single-family home on Briscoe Lane the noise barrier would have to be up to 24 feet in height and 2,178 feet in length. A noise barrier that benefits only the single-family home does not meet VDOT's cost-effectiveness criteria of 1,600 SF/BR, as the barrier would range from 16 to 24 feet high, with a length of 1,523 feet and a surface area of 35,308 square-feet. An extension of Noise Barrier F to the south has not been considered to benefit the isolated home, since the barrier does not need to be extended in order to benefit any of the impacted units in the Hamptons at Noble apartment complex.

From these findings, the proposed noise barrier design meets all of VDOT's criteria for feasibility and two of the three criteria for reasonableness. A survey of the community's desires for noise abatement is the third and final piece of the reasonableness determination. A public preference survey was performed in early 2019 – the results of which are summarized in the next section. Based on the outcome of the voting, Noise Barrier F is recommended for construction.

[19] The apartment building closest to the right-of-way has four floors with balconies. Only balcony locations on the second and third floor are considered in the feasibility and reasonableness determination, since the fourth floor balconies are above the point of intersection of a 30-foot tall noise barrier projected onto the façade facing the highway.

Appendix D provides a details of the fain design for Noise Barrier F, including tables of predicted noise levels and the sound attenuation line.

5 PUBLIC INVOLVEMENT PROCESS

This section documents the administration and results of the public preference surveys that were performed in 2018 for the single noise barrier that is recommended for construction. The community outreach and voting process followed VDOT's 2018 Highway Traffic Noise Impact Analysis Guidance Manual (Version 8). As described in Section 2.3.2, the views of the benefited receptors represent the third element needed to determine the reasonableness of a potential noise barrier. The preferences of the potentially benefited property owners and residents are surveyed through a mailing process. A majority of the benefited receptors must favor the barrier for it to be considered reasonable to construct.

5.1 Public Preference Surveys

Property owners and residents, including tenants, of all properties that would be benefited by Noise Barrier F were sent survey letters by certified mail. The letters and surveys, from VDOT's Assistant District Construction Engineer for the Fredericksburg District on VDOT letterhead, asked the respondents to indicate whether they wished to have the proposed noise barriers constructed or not. In these mailings, barrier details, contact information, a survey form and return envelope were provided to provide the property owner and residents with an understanding of the proposal and its implications, an opportunity to ask questions, and a formal survey form for expressing their views. Survey recipients were informed that of the votes tallied, fifty percent (50%) or more of the respondents must be in favor of the proposed noise barrier in order for that noise barrier to be considered for construction. Initially, a survey was mailed to the property owner (Hamptons at Noble, L.P.) in February 2019, since the owner's assistance was needed to identify the addresses for tenants within specific units of the apartment complex that should receive a ballot. Then, surveys were mailed to the tenants of each apartment unit that would be benefited by Noise Barrier F. Due to a low response rate, follow-up surveys were then mailed to each of the benefited units that had not responded.

For this project, a total of 55 certified letters were mailed. The disposition of all certified letters was tracked. Appendix I includes lists by barrier area of all affected property owners to whom mailings were sent. The lists include the property owners' name(s) and the address of the affected property. In cases where the affected property is rented, first the address of the affected property is listed with "To the Residents of" as the addressee, then the owner's name and mailing address is given on the following row. Appendix I includes examples of the letter packages that were sent to the property owners and residents.

5.2 Survey Responses

Table 7 provides a summary of the survey responses and the votes tallied for Noise Barrier F. The table indicates the number of letters sent, the number of survey forms sent back with responses in favor ("YES") and not in favor ("NO"), and the combined number of unclaimed letters, undeliverable letters and vacant properties. Appendix I includes study-area graphics that depict the property locations of the different responses. Appendix I also includes a table that lists the response or disposition of each letter sent.

Based on the responses received and the votes tallied, Noise Barrier F is recommended for construction.

Table 7 Summary of Barrier Survey Letters and Responses for Noise Barrier F

Total Number of Letters Sent		55
Response: In Favor of Barrier? "Yes"		14
Response: In Favor of Barrier? "No"		3
Unclaimed, Undeliverable or Vacant		38
Number of Weighted Votes Cast	**"Yes"**	162
	"No"	6
Percent of Votes from Respondents	**"Yes"**	96.4%
	"No"	3.6%

Note that the property owner inadvertently distributed surveys to two tenants who were not benefited by Noise Barrier F, and so were not eligible to vote. While a response was received from one of those tenants (a "no" vote), that vote was not tallied. Also note that the delivery of surveys to the tenants who were ineligible to vote are not included in the "total number of letters sent" in the first row of Table 7. In addition, the "No" note form the tenant who was not eligible to vote is not included in the results of Table 7.

Only the owners and residents of those receptor units that will be benefited by the proposed mitigation method may vote on whether the proposed noise barrier should be constructed according to Section 12.4.1 of VDOT's Guidance Manual.[20] Each vote is tallied and weighted according to *Table 2 Public Opinion Survey Weighting System* of VDOT's Guidance Manual, a copy of which is reproduced in Appendix I. The votes were tallied using VDOT's Voting Summary Worksheet – a Microsoft Excel spreadsheet that tallies and weights the votes according to VDOT policy and guidance.[21]

6 CONSTRUCTION NOISE CONSIDERATION

Construction noise provisions are contained in Section 107.16(b)3 Noise of the 2016 VDOT Road and Bridge Specifications. The specifications have been reproduced below:

- The Contractor's operations shall be performed so that exterior noise levels measured during a noise-sensitive activity shall not exceed 80 decibels. Such noise level measurements shall be taken at a point on the perimeter of the construction limit that is closest to the adjoining property on which a noise-sensitive activity is occurring. A noise-sensitive activity is any activity for which lowered noise levels are essential if the activity is to serve its intended purpose and not present an unreasonable public nuisance. Such activities include, but are not

[20] See footnote 12.

[21] Available at: http://www.vdot.virginia.gov/projects/pr-noise-walls-about.asp.

limited to, those associated with residences, hospitals, nursing homes, churches, schools, libraries, parks, and recreational areas.

- The Department may monitor construction-related noise. If construction noise levels exceed 80 decibels during noise sensitive activities, the Contractor shall take corrective action before proceeding with operations. The Contractor shall be responsible for costs associated with the abatement of construction noise and the delay of operations attributable to noncompliance with these requirements.
- The Department may prohibit or restrict to certain portions of the project any work that produces objectionable noise between 10 P.M. and 6 A.M. If other hours are established by local ordinance, the local ordinance shall govern.
- Equipment shall in no way be altered so as to result in noise levels that are greater than those produced by the original equipment.
- When feasible, the Contractor shall establish haul routes that direct his vehicles away from developed areas and ensure that noise from hauling operations is kept to a minimum.
- These requirements shall not be applicable if the noise produced by sources other than the Contractor's operation at the point of reception is greater than the noise from the Contractor's operation at the same point.

APPENDIX A LIST OF PREPARERS

This appendix lists the preparers of this report, who are all with Harris Miller Miller & Hanson Inc.:

- Christopher Menge, Senior Technical Advisor
- Christopher Bajdek, Project Manager
- Hayden Jubera, Noise Analyst (measurements, modeling, barrier design and graphics)
- Heather Bruce, Noise Analyst (barrier analysis)
- Dillon Tannler, Noise Analyst (modeling)
- Michael Hamilton, GIS support
- Emma Butterfield, GIS support
- Heather Hamilton, public survey support
- Kristine Collins, public survey support

TNM Certification of HMMH's Senior Technical Advisor, Christopher Menge, is on file in VDOT's offices.

APPENDIX B TRAFFIC DATA USED IN NOISE ANALYSIS

This appendix provides the future Build case loudest-hour roadway traffic volumes and speeds used in the noise modeling as shown in Table 8.

Table 8 Build (2040) Roadway Traffic Data used in Noise Analysis (Hour Starting at 13:00)

Roadway Name	Location	Vehicles per hour (vph)			Speed (mph)
		Autos	Medium Trucks	Heavy Trucks	
I-95 SB GP Lanes	From South to Rte. 3	5,681	313	713	61
I-95 SB GP Lanes	From North to Rte. 17	6,198	341	777	63
I-95 SB CD Road	South of Rte. 17 to North of Rte. 3	2,066	114	259	58
I-95 NB GP Lanes	North of Rte. 3 to South of Rte. 17	5,583	276	648	62
I-95 NB GP Lanes	From South to Rte. 3	4,637	229	538	59
I-95 NB GP Lanes	From North to Rte. 17	5,055	250	587	60
I-95 SB GP Lanes	South of Rte. 17 to North of Rte. 3	4,682	258	587	67
Route 17 WB	From Falls Run Dr To Powell Ln	2,652	59	547	40
Route 17 EB	From Powell Ln To Falls Run Dr	2,499	55	516	40
Route 3 WB	From Greengate Rd To Heatherstone Dr	2,393	27	67	44
Route 3 EB	From Heatherstone Dr To Greengate Rd	2,785	32	78	43
Route 3 WB	From Huntington Hills Ln To Oakwood St	2,021	30	74	41
Route 3 EB	From Oakwood St To Huntington Hills Ln	1,757	26	65	43
Route 17 WB	From Glen Alice Ln To Hornets Nest Ln	1,444	22	30	44
Route 17 EB	From Hornets Nest Ln To Glen Alice Ln	1,828	28	38	43
Ramp A	From NB I-95 To EB Route17	218	8	10	35
Ramp B	From EB Route17 to NB I-95	501	11	103	25
Ramp C	From NB I-95 To WB Route 17	1,776	47	221	24
Ramp D	From WB Route 17 to NB I-95	325	5	7	35
Ramp E	From SB I-95 To WB Route17	550	25	46	35
Ramp F	From WB Route 17 To SB I-95	139	3	29	32
Ramp G	From SB I-95 To EB Route17	285	5	7	25
Ramp H	From EB Route 17 To SB I-95	2,048	45	423	39
Ramp I	From NB I-95 To EB Route 3	243	5	5	35

Roadway Name	Location	Vehicles per hour (vph)			Speed (mph)
		Autos	Medium Trucks	Heavy Trucks	
Ramp J	From EB Route 3 To NB I-95	0	0	0	25
Ramp K	From NB I-95 To WB Route 3	459	25	58	25
Ramp L	From WB Route 3 To NB I-95	697	38	87	34
Ramp M	From SB I-95 To WB Route 3	1,697	93	213	32
Ramp N	From WB Route 3 To SB I-95	193	11	24	25
Ramp O	From SB I-95 To EB Route 3	648	36	81	24
Ramp P	From EB Route 3 to SB I-95	697	38	87	24

APPENDIX C DATA FOR NOISE MODEL VALIDATION

This appendix provides a table with the locations and coordinates of the noise measurement sites, as well as a table of the traffic counted simultaneously during the noise measurements, normalized to a period of one hour.

Table 9 Measurement Site Locations and Coordinates

Site Number	Address	NAD 83 Virginia State Plane Coordinates North (US Survey feet)		
		X	Y	Z
ST-1	Queensbury Court cul-de-sac	11,766,366.28	6,783,237.03	256.00
ST-2	11804 Berwick Court	11,767,090.99	6,786,005.73	237.00
ST-3	11925 Burgess Lane	11,766,883.27	6,788,332.40	246.50
ST-4	Pickett Street cul-de-sac	11,767,635.75	6,788,537.27	241.50
ST-5	Noble Way Apts (south by pond)	11,768,826.66	6,797,526.29	250.20
ST-6	Noble Way Apts (central)	11,768,784.22	6,797,720.29	252.60
ST-7	Noble Way Apts (north by pool)	11,768,755.37	6,797,939.18	254.80
ST-8	400 Bragg Hill Drive	11,768,965.01	6,799,493.72	245.40
ST-9	18 Riverside Parkway	11,769,934.68	6,806,328.04	233.20
ST-10	Musselman Road cul-de-sac	11,770,569.43	6,806,249.28	225.30
ST-11	48 Old Falls Road	11,775,518.29	6,812,045.68	240.50
ST-12	544 Truslow Road	11,775,844.26	6,813,258.22	241.00

Table 10 Traffic Count Data Normalized to One Hour

CNE	Site Number	Roadway	Autos	MT	HT	Estimated Speed (mph)
A	ST-1	I-95 Southbound	3,798	162	510	59
		I-95 Northbound	3,114	156	282	59
A	ST-2	I-95 Southbound	3,714	114	624	64
		I-95 Northbound	2,934	114	402	64
D	ST-3	I-95 Southbound	3,006	156	372	60
		I-95 Northbound	3,384	126	528	60
C	ST-4	I-95 Southbound	4,014	96	510	61
		I-95 Northbound	3,300	138	372	61
F	ST-5	I-95 Southbound	4,176	108	306	72
		I-95 Northbound	3,966	138	318	72
F	ST-6	I-95 Southbound	5,016	138	372	45
		I-95 Northbound	3,516	126	318	67
F	ST-7	I-95 Southbound	4,536	102	402	59
		I-95 Northbound	4,092	186	474	67
-	ST-8	I-95 Southbound	3,456	114	426	34
		I-95 Northbound	4,092	162	450	68
H	ST-9	I-95 Southbound	3,762	144	564	65
		I-95 Northbound	3,540	120	516	64
I	ST-10	I-95 Southbound	3,996	192	528	64
		I-95 Northbound	3,876	144	522	69
J	ST-11	I-95 Southbound	2,964	114	294	67
		I-95 Northbound	3,654	168	456	67
K	ST-12	I-95 Southbound	3,162	174	426	60
		I-95 Northbound	3,354	90	450	66

Note: Traffic counts were taken for 20 minutes at each site. The count data were normalized to one-hour volumes in this table.

APPENDIX D DETAILED NOISE BARRIER DESIGN REPORTS

This appendix provides the detailed noise barrier design report for Potential Noise Barrier F.

Description: CNE C, Potential Barrier C

Common Noise Environment (CNE) C is located on the northbound side of I-95, south of the Route 3 interchange. Noise-sensitive land use consists of single-family homes on Pickett Street & Pickett Circle, as well as recreational facilities including a pool, a playground, and a tennis court in the Village of Idlewild. CNE C was previously identified as NSA 14 in the environmental reevaluation,[1] and also was evaluated in the noise study for the I-95 HOT Lanes Project (UPC 70850).

Noise abatement is warranted for CNE C since traffic noise impact is predicted to occur at seven residences in the Village of Idlewild and three recreational receptors at the community center as a result of the proposed project. The noise barrier would be 15 feet high and 1,609 feet long, with a surface area of 24,140 square feet. Noise Barrier C would provide 5 to 10 decibels of noise reduction at all of the impacted receptors, thereby meeting both the acoustical feasibility and noise reduction design goals. The barrier also would benefit six non-impacted residences, while providing an average noise reduction of 6 decibels (averaged over the benefited receptors). The noise barrier meets the cost-effectiveness criterion at 1,509 SF/BR and so is considered reasonable.

This abbreviated report presents a preliminary design for Potential Noise Barrier C to mitigate the predicted noise impact at residential and recreational receptors. This report provides a summary table, as well as tables of predicted sound levels, receptor coordinates, and the sound attenuation line. Additional details about the noise study may be found in the Noise Abatement Design Report for Noise Barrier F, included in Appendix D to the full report. Such additional details include narratives and tables that describe and/or summarize the results of the noise measurements, the noise model validation, and traffic data used as input to the FHWA TNM Version 2.5.

Normally as part of a final design study and after such a determination has been made, VDOT would survey the affected property owners and residents to solicit their viewpoints about the proposed noise barrier and whether they support barrier construction. However in this situation, the pending I-95 Northbound Rappahannock River Crossing Project (UPC 105510) may affect the requirements for noise abatement in this community. As a result, the final design for Noise Barrier C will be reevaluated as part of that project's final design with the community survey taking place at that time, as necessary. The anticipated completion of the design study for the northbound project is early-2021. A notification letter was mailed to the property owners and residents of benefited receptors to convey the information described in this paragraph.

Table 1: Summary of Results – Potential Noise Barrier C provides an overview of the preliminary design for Potential Noise Barrier C.

1 Virginia Department of Transportation, memorandum from T. Ross Hudnall to File with subject "Rappahannock River Crossing NEPA Reevaluation," UPC 101595, Project No. 007-053-086, B668, C501, P101, R201, dated August 7, 2017.

Table 1: Summary of Results – Potential Noise Barrier C

Impacted residential receptors with NAC of 67 dBA, Leq	7
Impacted non-residential residential receptors with NAC of 67 dBA, Leq	3
Impacts due to substantial increases in existing noise	0
Impacted residential receptors receiving 5 dBA IL or more	7
Impacted non-residential receptors receiving 5 dBA IL or more	3
Not Impacted receptors receiving 5 dBA IL or more	6
Total benefited noise-sensitive receptors receiving 5 dBA IL or more	16
Are 50% Impacted receptors receiving 5 dB IL (Yes/No, %)	Yes, 100%
Impacted receptors receiving 7 dBA or more IL	4
Total Barrier Surface Area (Square Feet)	24,140
Barrier Surface Area (SF) per Benefited Receptor (SF/BR)	1,509
Is Barrier Reasonable (Surface Area ≤1600 SF/BR)?	Yes
Average Noise Reduction at benefited receptors (dB)	6.0
Total Barrier Length (Feet)	1,609
Minimum Barrier Height (Feet)	15
Maximum Barrier Height (Feet)	15
Average Barrier Height (Feet)	15
Cost per Square Foot (state-wide average as of 2/23/2017)	$42
Total Barrier Cost	$1,013,880

Table 2: Predicted Loudest-hour Noise Levels in CNE C provides the details of the predicted noise levels at receptors behind Potential Barrier C. Table 2 includes the address or site description, the site number for reference with the attached figure, the number of residential or recreational units associated with the receptor, the predicted design-year (2040) loudest-hour L_{eq} without and with the potential noise barrier, and the barrier insertion loss. Sound levels in Table 2 are colored red to indicate receptors for which the loudest hour L_{eq} approaches or exceeds the FHWA Noise Abatement Criteria (NAC). Receptors' insertion loss values in Table 2 are shown in bold with shaded cells to indicate benefited receptors (receptors that receive 5 dBA, or more, of insertion loss from the noise barrier). Sheet 3 of 13 in Figure 1 of the main body of the report shows the locations of CNE C receptors behind Barrier C, as well as the noise barrier and the adjacent Project roadways. The coordinates of the modeled receptor locations contained within the TNM are shown in *Table 3: Receptor Site Locations*. The preliminary heights and top elevation of the potential barrier are given in *Table 4: Sound Attenuation Line.*

Table 2: Predicted Loudest Hour Noise Levels in CNE C

Receptor Site Number	Site Address*	No. Units	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)**
C-001	1208 PICKETT CIR	1	**68**	60	8
C-002	1206 PICKETT CIR	1	**70**	61	10
C-003	1204 PICKETT CIR	1	**67**	59	8
C-004	1202 PICKETT CIR	1	65	59	6
C-005	1200 PICKETT CIR	1	63	59	4
C-006	1112 PICKETT ST	1	63	59	4
C-007	1110 PICKETT ST	1	63	59	4
C-008	1108 PICKETT ST	1	64	59	4
C-009	1106 PICKETT ST	1	64	59	5
C-010	1104 PICKETT ST	1	64	59	5
C-011	1102 PICKETT ST	1	64	60	4
C-012	1100 PICKETT ST	1	64	60	4
C-013	1016 PICKETT ST	1	64	60	4
C-014	1014 PICKETT ST	1	64	60	4
C-015	1012 PICKETT ST	1	65	61	4
C-016	2280 IDLEWILD BLVD	1	**67**	61	6
C-017	2280 IDLEWILD BLVD	1	**67**	62	5
C-018	2280 IDLEWILD BLVD	1	**70**	64	6
C-019	1210 PICKETT CIR	1	**67**	60	7
C-020	1212 PICKETT CIR	1	65	63	2
C-021	1214 PICKETT CIR	1	63	62	1
C-022	1216 PICKETT CIR	1	62	60	1
C-023	1218 PICKETT CIR	1	61	60	1
C-024	1010 AUSTIN DR	1	61	59	1
C-025	1120 HAMPTON ST	7	59	56	3
C-026	1109 PICKETT ST	3	61	58	3
C-027	1106 HAMPTON ST	7	60	56	4
C-028	1103 PICKETT ST	3	61	58	3
C-029	1015 PICKETT ST	1	62	59	4
C-030	1013 PICKETT ST	1	63	59	4

Receptor Site Number	Site Address*	No. Units	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)**
C-031	1011 PICKETT ST	1	64	59	5
C-032	1009 PICKETT ST	1	65	60	6
C-033	1007 PICKETT ST	1	65	60	6
C-034	1005 PICKETT ST	1	**66**	60	5
C-035	1003 PICKETT ST	1	**66**	61	5
C-036	1001 PICKETT ST	1	**67**	62	5
C-037	1016 HAMPTON ST	4	59	56	3
C-038	1010 HAMPTON ST	4	60	57	3
C-039	1004 HAMPTON ST	1	60	58	2
C-040	1002 HAMPTON ST	1	61	58	2
C-041	2200 IDLEWILD BLVD	1	59	57	2
C-042	2202 IDLEWILD BLVD	1	60	58	3
C-043	2204 IDLEWILD BLVD	1	62	59	3
C-044	2206 IDLEWILD BLVD	1	63	60	3
C-045	2208 IDLEWILD BLVD	1	65	63	2
C-046	1210 WALKER DR	1	60	60	0

* All receptors are in the City of Fredericksburg with the zip code 22401.
** Rounding of decibels may make some subtractions appear incorrect

Table 3: Receptor Site Locations in CNE C

Receptor Site Number	Site Address*	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
C-001	1208 PICKETT CIR	11,767,447.00	6,787,547.00	247.54
C-002	1206 PICKETT CIR	11,767,400.00	6,787,646.50	247.51
C-003	1204 PICKETT CIR	11,767,419.00	6,787,714.50	246.88
C-004	1202 PICKETT CIR	11,767,433.00	6,787,763.50	247.97
C-005	1200 PICKETT CIR	11,767,445.00	6,787,827.50	247.54
C-006	1112 PICKETT ST	11,767,453.00	6,787,875.00	246.92
C-007	1110 PICKETT ST	11,767,462.00	6,787,938.00	245.87
C-008	1108 PICKETT ST	11,767,474.00	6,787,998.00	244.91

Receptor Site Number	Site Address*	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
C-009	1106 PICKETT ST	11,767,489.00	6,788,046.50	244.06
C-010	1104 PICKETT ST	11,767,502.00	6,788,110.00	243.08
C-011	1102 PICKETT ST	11,767,515.00	6,788,159.00	241.90
C-012	1100 PICKETT ST	11,767,523.00	6,788,221.50	242.65
C-013	1016 PICKETT ST	11,767,543.00	6,788,271.00	240.68
C-014	1014 PICKETT ST	11,767,558.00	6,788,335.50	240.19
C-015	1012 PICKETT ST	11,767,570.00	6,788,389.50	240.03
C-016	2280 IDLEWILD BLVD	11,767,541.00	6,788,510.00	241.44
C-017	2280 IDLEWILD BLVD	11,767,593.00	6,788,482.50	241.44
C-018	2280 IDLEWILD BLVD	11,767,663.00	6,788,654.00	242.36
C-019	1210 PICKETT CIR	11,767,484.00	6,787,501.50	247.38
C-020	1212 PICKETT CIR	11,767,546.00	6,787,449.50	247.11
C-021	1214 PICKETT CIR	11,767,598.00	6,787,494.00	247.64
C-022	1216 PICKETT CIR	11,767,654.00	6,787,541.50	247.90
C-023	1218 PICKETT CIR	11,767,660.00	6,787,607.50	246.92
C-024	1010 AUSTIN DR	11,767,693.00	6,787,685.00	248.39
C-025	1120 HAMPTON ST	11,767,729.00	6,787,907.00	248.29
C-026	1109 PICKETT ST	11,767,612.00	6,787,959.50	246.85
C-027	1106 HAMPTON ST	11,767,774.00	6,788,080.50	244.32
C-028	1103 PICKETT ST	11,767,646.00	6,788,110.50	244.09
C-029	1015 PICKETT ST	11,767,694.00	6,788,277.50	240.65
C-030	1013 PICKETT ST	11,767,706.00	6,788,321.50	239.60
C-031	1011 PICKETT ST	11,767,712.00	6,788,370.00	238.58
C-032	1009 PICKETT ST	11,767,726.00	6,788,410.50	239.07
C-033	1007 PICKETT ST	11,767,738.00	6,788,451.00	239.80
C-034	1005 PICKETT ST	11,767,749.00	6,788,489.00	240.85
C-035	1003 PICKETT ST	11,767,756.00	6,788,533.00	242.32
C-036	1001 PICKETT ST	11,767,766.00	6,788,572.00	242.75
C-037	1016 HAMPTON ST	11,767,822.00	6,788,260.50	240.91
C-038	1010 HAMPTON ST	11,767,848.00	6,788,363.50	238.02
C-039	1004 HAMPTON ST	11,767,868.00	6,788,427.00	237.34

Receptor Site Number	Site Address*	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
C-040	1002 HAMPTON ST	11,767,888.00	6,788,504.50	237.50
C-041	2200 IDLEWILD BLVD	11,767,982.00	6,788,548.00	239.14
C-042	2202 IDLEWILD BLVD	11,767,951.00	6,788,571.00	239.86
C-043	2204 IDLEWILD BLVD	11,767,902.00	6,788,608.50	240.32
C-044	2206 IDLEWILD BLVD	11,767,871.00	6,788,634.00	240.62
C-045	2208 IDLEWILD BLVD	11,767,840.00	6,788,657.50	241.11
C-046	1210 WALKER DR	11,767,830.00	6,787,332.50	237.11

* All receptors are in the City of Fredericksburg with the zip code 22401.

Table 4: Sound Attenuation Line for Potential Noise Barrier C

Approximate Station No. (I-95 SB)	Barrier Coordinates (feet) (NAD 83 Virginia State Plane North)		Elevation (feet)		Estimated Height Above Ground (feet)
	X	Y	Estimated Ground	Top of Barrier	
	11,767,462.00	6,787,433.50	237.83	252.83	15
	11,767,415.00	6,787,488.00	237.30	252.30	15
	11,767,361.00	6,787,551.50	242.16	257.16	15
	11,767,297.00	6,787,635.50	241.17	256.17	15
	11,767,322.00	6,787,759.50	250.92	265.92	15
	11,767,354.00	6,787,896.00	253.84	268.84	15
	11,767,384.00	6,788,038.50	253.87	268.87	15
	11,767,416.00	6,788,178.50	249.77	264.77	15
	11,767,448.00	6,788,314.00	249.90	264.90	15
	11,767,479.00	6,788,447.50	249.41	264.41	15
	11,767,507.00	6,788,567.00	247.64	262.64	15
	11,767,535.00	6,788,701.50	242.42	257.42	15
	11,767,566.00	6,788,820.00	242.62	257.62	15
	11,767,601.00	6,788,949.00	244.91	259.91	15

Description: CNE F, Potential Barrier System F

The I-95 Southbound Collector-Distributor (C-D) Lanes – Rappahannock River Crossing (RRC) Project (VDOT Projects 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751; UPC 1101595) spans Stafford and Spotsylvania Counties and the City of Fredericksburg in Virginia. The project seeks to reduce congestion along the southbound side of I-95 in Fredericksburg by separating local traffic from through traffic. From just north of Route 17 in Stafford County to just south of Route 3 in Spotsylvania County, three new I-95 southbound lanes will been constructed in the current median to serve as general purpose (GP) lanes for through (express) traffic. The three existing I-95 southbound lanes will be converted to three southbound C-D lanes for local traffic to access the interchanges at Routes 17 and 3. The Project also builds an additional bridge over the Rappahannock River, parallel to the existing I-95 southbound bridge.

Common Noise Environment (CNE) F is located on the southbound side of I-95 between the Fall Hill Avenue overpass in the north and the Cowan Boulevard overpass in the south. It consists of relatively new multi-family residential units that are part of the Hamptons at Noble apartment complex, as well as an existing single-family home on Briscoe Lane. Note that CNE F was previously referred to as CNE AA in the 2017 NEPA Reevaluation.[1]

Noise abatement is warranted for CNE F since traffic noise impact is predicted to occur with the proposed Project in the design-year (2040). A total of 38 units in the Hamptons at Noble with balconies and/or patios below the point-of-intersection with a 30-foot high noise wall[2] would be exposed to traffic noise levels that approach or exceed the Federal Highway Administration (FHWA) Noise Abatement Criteria (NAC) for residential land use. In addition, one single-family home on Briscoe Lane also would be exposed to traffic noise impact due to the Project. These impacted residences are therefore eligible for consideration of noise abatement. Consequently, the following design for Potential Noise Barrier F was developed to mitigate the anticipated noise impacts. Potential Barrier F would be located along the southbound side of I-95 and extend from approximate Station No. 3495 in the north to approximate Station No. 3483 in the south.

Table 1 provides an overall summary of the potential noise barrier under consideration for CNE F.

[1] VDOT memorandum from T. Ross Hudnall to File with subject "Rappahannock River Crossing NEPA Reevaluation," UPC 101595, Project No. 007-053-086, B668, C501, P101, R201, dated August 7, 2017.

[2] Consistent with VDOT policy and guidance, only apartments on the third floor and below were considered for the feasibility and reasonableness determination. One apartment building has 4th floor units that are above the point-of-intersection with a 30-foot high noise barrier wall. While some of these units would be exposed to traffic noise impact as a result of the Project, these 4th floor units were not considered in the analysis of Potential Noise Barrier F.

Table 1: Summary of Results – Potential Noise Barrier F

Impacted residential receptors with NAC of 67 dBA, Leq	39
Impacted non-residential residential receptors with NAC of 67 dBA, Leq	0
Impacts due to substantial increases in existing noise	0
Impacted residential receptors receiving 5 dBA IL or more	38
Impacted non-residential receptors receiving 5 dBA IL or more	0
Not Impacted receptors receiving 5 dBA IL or more	16
Total benefited noise-sensitive receptors receiving 5 dBA IL or more	54
Are 50% Impacted receptors receiving 5 dB IL (Yes/No, %)	Yes, 97%
Impacted receptors receiving 7 dBA or more IL	29
Total Barrier Surface Area (Square Feet)	20,427
Barrier Surface Area (SF) per Benefited Receptor (SF/BR)	378
Is Barrier Reasonable (Surface Area ≤1600 SF/BR)?	Yes
Average Noise Reduction at benefited receptors (dB)	8.0
Total Barrier Length (Feet)	1,181
Minimum Barrier Height (Feet)	16.0
Maximum Barrier Height (Feet)	18.0
Average Barrier Height (Feet)	17.4
Cost per Square Foot (state-wide average as of 2/23/2017)	$42.00
Total Barrier Cost	$857,934

Noise Analysis Approach and Comments:

Harris Miller Miller & Hanson Inc. (HMMH) prepared this report after conducting a detailed noise barrier design study in coordination with Johnson, Mirmiran & Thompson, Inc. (JMT) and the Virginia Department of Transportation (VDOT). The purposes of this study were to develop a refined and detailed noise modeling for the study area, to determine whether and where traffic noise impacts are predicted to occur in the design year (2040), and to design a noise barrier to mitigate potential impacts, wherever they are warranted. The methods and procedures used in this study are consistent with the latest noise assessment policies issued by FHWA[3, 4] and VDOT.[5]

[3] 23 CFR Part 772, as amended 75 FR 39820, July 13, 2010; Effective date July 13, 2011 – "Procedures for Abatement of Highway Traffic Noise and Construction Noise," Federal Highway Administration, U.S. Department of Transportation. http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/

[4] "Highway Traffic Noise: Analysis and Abatement Guidance," Federal Highway Administration, U.S. DOT, June 2010, revised January 2011. http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf

[5] "Highway Traffic Noise Impact Analysis Guidance Manual (Version 8)," Virginia Department of Transportation, updated February 20, 2018. http://www.virginiadot.org/projects/pr-noise-walls-about.asp

Modeling Approach

HMMH used the latest version of the FHWA's Traffic Noise Model (TNM Version 2.5) to compute future Build case loudest-hour noise levels and noise barrier performance at all of the noise sensitive receptors in the study area, and to develop the appropriate heights, lengths and locations for all warranted noise barriers. TNM runs were developed from MicroStation roadway design files supplied by JMT, existing terrain elevation information from LiDAR, aerial imagery from ArcGIS Online, and additional GIS data from Stafford and Spotsylvania counties, as well as the City of Fredericksburg. The modeling accounted for the variability in the local terrain and included the following parameters that affect the propagation of traffic noise: terrain lines, ground zones, building rows and fixed height barriers to represent large buildings. The default ground type used in the modeling was "lawn."

Noise Monitoring and Model Validation

HMMM conducted short-term monitoring of 30 minutes duration at each of 12 locations along the project corridor on May 23 and 24, 2018. Vehicle classification counts for traffic on I-95 were conducted simultaneously with the noise measurements, so that normalized traffic count data could be used as input to the TNM model for model validation. Short-term noise measurements were conducted at three locations within CNE F, identified as Sites ST-5, ST-6, and ST-7. *Figure 1: Study Area and Measurement Location Map* shows all of the monitoring locations and the extent of the study area.

The validation process compares monitored sound levels at each measurement site to the noise levels calculated with TNM using the existing site geometry and normalized traffic count data as input to the model. The modeling assumptions are refined, as necessary, until the agreement between monitored and calculated noise levels are within an acceptable range of ± 3 dBA, in accordance with VDOT policy.

The results of the model validation are shown in *Table 2: Noise Modeling Validation Results*. The Project-wide average difference between calculated noise levels and monitored noise levels was +1.0 decibels (over all 12 sites), which shows excellent agreement between monitored and modeled sound levels and suggests confidence in the modeling assumptions. While the differences between calculated and monitored levels were outside the acceptable range at Sites ST-4 and ST-9,[6] the agreement between calculated and monitored levels was within the acceptable range at the

[6] At Site ST-4, the calculated noise level was 66.0 dBA L_{eq}, while the monitored noise level was 61.6 dBA L_{eq}, representing an apparent over-prediction of 4.4 dBA. There is a stockade fence of up to 6 feet in height along the right-of-way between M4 and the northbound lanes of I-95. Stockade fences are typically not very effective sound "attenuators" due to the gaps that exist between the vertical panels. However, if the stockade fence is of sufficient mass, it may provide some excess sound attenuation – and a few decibels of excess attenuation is plausible and not accounted for in the noise model.
At Site ST-9, the calculated noise level was 64.9 dBA L_{eq}, while the monitored noise level was 61.7 dBA L_{eq}, representing an apparent over-prediction of 3.2 dBA. This site has significant attenuation that could be attributed to trees and terrain. A review of a photograph taken during the noise measurement suggests that there might have been more vegetation along the propagation path than what had been accounted for in the model.

three measurement sites in CNE F – that is, at Sites ST-5, ST-6, and ST-7. The coordinates of the monitoring sites that were used as input to TNM for the validation are shown in *Table 3: Monitoring Site Location Data.* At each monitoring site, HMMH staff obtained simultaneous traffic classification counts, which were subsequently normalized to hourly volumes as shown in *Table 4: Validation Traffic Counts Converted to One Hour Volumes*. HMMH sampled vehicle speeds using a hand-held radar gun, Pocket Radar™.

Traffic Data Used in Noise Modeling

The noise model for CNE F included the I-95 general-purpose lanes and the collector-distributor lanes in both the southbound and northbound directions. JMT provided HMMH with traffic data for the design year of 2040 for all of the mainline Project roadways and the ramps at both of the interchanges in the study area, as well as the major cross streets (Route 17 and Route 3). The traffic data were provided as hourly volumes in VDOT's Environmental Traffic Data (ENTRADA) spreadsheets. HMMH conducted a determination of the loudest hour of the day consistent with VDOT's current (2014) methodology. The loudest-hour evaluation began by using TNM to compute the overall traffic noise level at a reference distance from I-95 for each hour of the day. The TNM model of the complete study area was then used with selected receptors to refine the selection of the loudest hour. The loudest hour analysis demonstrated that traffic conditions for the hour from 1:00 p.m. to 2:00 p.m. consistently generated the highest noise levels throughout the corridor. Therefore, the traffic for that hour was used for all roadways in the analysis.

The design-year traffic data for the mainline Project roadways that were used as input to the TNM are shown in *Table 5: TNM Build Case Loudest-Hour Traffic Data - Design Year 2040*.

Predicted Sound Levels, Impact and Noise Barrier Details

Table 6: Predicted Loudest-hour Noise Levels provides the details of the predicted noise levels at receptors behind Barrier System F that are below the point of intersection with a 30-foot high noise barrier along the right-of-way. The Hamptons at Noble apartments include patios at ground level and balconies on the second through fourth floors. Only those units at the ground level and on the second and third floors are below the top of a 30-foot high barrier and are therefore included in the feasibility and reasonableness determination. Table 6 includes the address or site description, the site number for reference with the attached figure, the number of noise-sensitive dwelling units associated with the receptor, the predicted design-year (2040) loudest-hour L_{eq} without and with the potential noise barrier, and the barrier insertion loss. Sound levels within Table 6 are colored red to indicate receptors for which the loudest hour L_{eq} approaches or exceeds the FHWA Noise Abatement Criteria (NAC). Receptors' insertion loss values in Table 6 are shown in bold with shaded cells to indicate benefited receptors (receptors that receive 5 dBA, or more, of insertion loss from the noise barrier). *Figure 2: Location Map for Receptors and Barriers – Barrier F* shows the locations of all receptors as well as the noise barriers and the adjacent Project roadways. The coordinates of the modeled receptor locations contained within the TNM are shown in *Table 7: Receptor Site Locations*.

Details of the barrier location and height are given in *Table 1: Summary of Results - Potential Barrier System F* and coordinates and recommended height and top elevation of the potential barriers are given in *Table 8: Sound Attenuation Line.* The potential barrier system and its location are shown on the attached plan map graphic, *Figure 2: Location Map for Receptors and Barriers – Barrier F.*

A total of 128 receptors were evaluated to determine noise impact within CNE F – noise impact is predicted to occur at a total of 39 residences in CNE F, not including units on the fourth floor of the building to the east of Noble Way.[7] Impacted receptors are located at ground-floor units and balcony locations on the second and third floors for apartments within the Hamptons at Noble complex, and at one single-family home located on Briscoe Lane. These impacted receptors have projected Build case exterior L_{eq}s ranging from 53 to 78 dBA, which exceed the FHWA NAC for Activity Category B. Because noise impact is predicted to occur with the design-year Build alternative, noise abatement is warranted, and therefore HMMH evaluated the feasibility and reasonableness for noise barrier design options for the impacted properties.

The potential noise barrier would have a total length of 1,181 feet, range in height from 16 to 18 feet, and have a surface area of 20,427 square feet. Noise Barrier F would benefit a total of 38 apartments with ground floor patios and/or balconies – note that only the balcony locations on the second and third floor are considered in the feasibility and reasonableness determination. All of the impacted apartments would receive at least 5 decibels of noise reduction from the noise barrier, thereby meeting VDOT's criteria for acoustical feasibility. A total of 29 units would receive noise reductions that exceed the design goal of 7 decibels. Another 16 non-impacted apartments also would be benefited by the barrier – for a total of 54 benefited residential receptors. At the benefited receptors, Potential Noise Barrier F would provide from 5 dBA to 12 dBA of noise reduction, with an average weighted insertion loss of 8.0 dBA. The resulting surface area per benefited receptor for Noise Barrier F would be 378 SF/BR, which is below VDOT's reasonableness criterion of 1600 SF/BR.

The evaluation also considered extending the noise barrier to the south to benefit the impacted single-family home at 44 Briscoe Lane. Potential Noise Barrier F, as presented in this report, at a height of 16 to 18 feet and a length of 1,181 feet, would benefit all of the eligible impacted units in the Hamptons at Noble (i.e. those units on the ground floor and the second and third floors). Extending the noise barrier to the south at a height of 18 feet yields only 4 decibels of noise reduction at the single-family home. In order to benefit the single-family home on Briscoe Lane the noise barrier would have to be up to 24 feet in height and 2,178 feet in length. A noise barrier that benefits only the single-family home does not meet VDOT's cost-effectiveness criteria of 1,600 SF/BR, as the barrier would range from 16 to 24 feet high, with a length of 1,523 feet and a

[7] Noise impact also would occur at four balcony locations on the fourth floor of the building on the east side of Noble Way, since predicted Project noise levels are expected to be 78 dBA L_{eq} during the loudest hour of the day. However, these fourth floor units are not included in the analysis of Potential Noise Barrier F, as discussed previously.

surface area of 35,308 square-feet.[8] An extension of Barrier F to the south has not been considered to benefit the isolated home, since the barrier does not need to be extended in order to benefit any of the impacted units in the Hamptons at Noble apartment complex.

Hamptons Phase II is the second phase of the Hamptons at Noble apartment complex, which will be located to the west and south of the completed first phase that is the subject of this report. The City had informed VDOT that the future properties at Noyack Lane, Mecox Lane, and Sag Harbor Lane were issued building permits on February 12, 2018. VDOT is currently operating under an agreement with FHWA that the Date of Public Knowledge (DOPK) for this project is September 7, 2017, when the Southbound NEPA Reevaluation was approved by FHWA.[9] Whereas the DOPK predates the issuance of a permit for Hampton Phase II, and since VDOT is under no obligation to provide noise abatement for any noise-sensitive properties in this proposed development, this determination did not consider potential noise impacts in Hampton Phase II.

From these findings, the proposed noise barrier design meets all of VDOT's criteria for feasibility and two of the three criteria for reasonableness. A survey of the community's desires for noise abatement is the third and final piece of the reasonableness determination. Therefore, HMMH will conduct a public preference survey of the benefited properties consistent with VDOT policies. A majority of the benefited property owners and residents must be in favor of the noise barrier for construction to proceed. The results of the survey in each neighborhood will be compiled and published in the Overall Noise Abatement Design Study Report.

[8] To benefit the single-family home, the noise barrier would have to extend northward to the southernmost building in the Hamptons at Noble apartment complex.

[9] Email from T. Ross Hudnall to Christopher Bajdek with subject "Re: FW: Development Screening" and dated 7/31/2018 at 10:41 AM.

Table 2: Noise Modeling Validation Results

CNE	Site Number	Location	Monitored L_{eq} (dBA)	TNM Computed L_{eq} (dBA)	Difference (dB) (computed – monitored)
A	ST-1	Queensbury Court cul-de-sac	58.6	56.0	-2.6
A	ST-2	11804 Berwick Court	64.5	62.3	-2.2
D	ST-3	11925 Burgess Lane (New Life Church)	67.7	70.2	2.5
C	ST-4	cul-de-sac at north end of Pickett Street	61.6	66.0	4.4
F	ST-5	Noble Way Apartments (south by pond)	63.2	65.3	2.1
F	ST-6	Noble Way Apartments (central)	63.4	61.2	-2.2
F	ST-7	Noble Way Apartments (north by pool)	66.7	68.5	1.8
-	ST-8	400 Bragg Hill Drive (Kingdom Family Worship Ctr)	65.0	63.8	-1.2
H	ST-9	18 Riverside Parkway	61.7	64.9	3.2
I	ST-10	Musselman Road cul-de-sac	71.2	73.3	2.1
J	ST-11	48 Old Falls Road	64.1	66.3	2.2
K	ST-12	544 Truslow Road (Stafford Nursery)	72.3	74.3	2.0
				Average difference:	1.0
				Standard deviation of difference:	2.4

Table 3: Monitoring Site Location Data

Site Number	Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
ST-1	Queensbury Court cul-de-sac	11,766,366.28	6,783,237.03	256.00
ST-2	11804 Berwick Court	11,767,090.99	6,786,005.73	237.00
ST-3	11925 Burgess Lane	11,766,883.27	6,788,332.40	246.50
ST-4	Pickett Street cul-de-sac	11,767,635.75	6,788,537.27	241.50
ST-5	Noble Way Apts (south by pond)	11,768,826.66	6,797,526.29	250.20
ST-6	Noble Way Apts (central)	11,768,784.22	6,797,720.29	252.60
ST-7	Noble Way Apts (north by pool)	11,768,755.37	6,797,939.18	254.80
ST-8	400 Bragg Hill Drive	11,768,965.01	6,799,493.72	245.40
ST-9	18 Riverside Parkway	11,769,934.68	6,806,328.04	233.20
ST-10	Musselman Road cul-de-sac	11,770,569.43	6,806,249.28	225.30
ST-11	48 Old Falls Road	11,775,518.29	6,812,045.68	240.50
ST-12	544 Truslow Road	11,775,844.26	6,813,258.22	241.00

Note: Data used in the TNM validation modeling.

Table 4: Validation Traffic Counts Converted to One Hour Volumes

CNE	Site Number	Roadway	Autos	MT	HT	Speed (mph)
A	ST-1	I-95 Southbound	3,798	162	510	59
		I-95 Northbound	3,114	156	282	59
A	ST-2	I-95 Southbound	3,714	114	624	64
		I-95 Northbound	2,934	114	402	64
D	ST-3	I-95 Southbound	3,006	156	372	60
		I-95 Northbound	3,384	126	528	60
C	ST-4	I-95 Southbound	4,014	96	510	61
		I-95 Northbound	3,300	138	372	61
F	ST-5	I-95 Southbound	4,176	108	306	72
		I-95 Northbound	3,966	138	318	72
F	ST-6	I-95 Southbound	5,016	138	372	45
		I-95 Northbound	3,516	126	318	67
F	ST-7	I-95 Southbound	4,536	102	402	59
		I-95 Northbound	4,092	186	474	67
-	ST-8	I-95 Southbound	3,456	114	426	34
		I-95 Northbound	4,092	162	450	68
H	ST-9	I-95 Southbound	3,762	144	564	65
		I-95 Northbound	3,540	120	516	64
I	ST-10	I-95 Southbound	3,996	192	528	64
		I-95 Northbound	3,876	144	522	69
J	ST-11	I-95 Southbound	2,964	114	294	67
		I-95 Northbound	3,654	168	456	67
K	ST-12	I-95 Southbound	3,162	174	426	60
		I-95 Northbound	3,354	90	450	66

Table 5: TNM Build Case Loudest-Hour (13:00) Traffic Data - Design Year 2040

Roadway Name	Location	Vehicles per hour (vph)			Speed (mph)
		Autos	Medium Trucks	Heavy Trucks	
I-95 SB GP Lanes	From South to Rte. 3	5,681	313	713	61
I-95 SB GP Lanes	From North to Rte. 17	6,198	341	777	63
I-95 SB CD Road	South of Rte. 17 to North of Rte. 3	2,066	114	259	58
I-95 NB GP Lanes	North of Rte. 3 to South of Rte. 17	5,583	276	648	62
I-95 NB GP Lanes	From South to Rte. 3	4,637	229	538	59
I-95 NB GP Lanes	From North to Rte. 17	5,055	250	587	60
I-95 SB GP Lanes	South of Rte. 17 to North of Rte. 3	4,682	258	587	67

Table 6: Predicted Loudest Hour Noise Levels

Receptor Site Number	Site Address*	No. Units**	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)***
F-001	Peconic Lane, Row 1 Flr. 1	1	66	62	5
F-002	Peconic Lane, Row 1 Flr. 2	1	70	64	6
F-003	Peconic Lane, Row 1 Flr. 3	1	73	65	7
F-004	Peconic Lane, Row 1 Flr. 1	1	67	62	6
F-005	Peconic Lane, Row 1 Flr. 2	1	72	64	8
F-006	Peconic Lane, Row 1 Flr. 3	1	74	66	8
F-007	Peconic Lane, Row 1 Flr. 1	1	67	62	6
F-008	Peconic Lane, Row 1 Flr. 2	1	73	64	9
F-009	Peconic Lane, Row 1 Flr. 3	1	75	66	9
F-010	Peconic Lane, Row 1 Flr. 1	1	69	62	7
F-011	Peconic Lane, Row 1 Flr. 2	1	75	64	12
F-012	Peconic Lane, Row 1 Flr. 3	1	77	67	10
F-013	Peconic Lane, Row 2 Flr. 1	1	56	53	3
F-014	Peconic Lane, Row 2 Flr. 2	1	60	54	7
F-015	Peconic Lane, Row 2 Flr. 3	1	64	56	8
F-016	Peconic Lane, Row 2 Flr. 1	1	57	54	4
F-017	Peconic Lane, Row 2 Flr. 2	1	63	55	8
F-018	Peconic Lane, Row 2 Flr. 3	1	67	57	10
F-019	Peconic Lane, Row 2 Flr. 1	1	59	55	4
F-020	Peconic Lane, Row 2 Flr. 2	1	64	56	8
F-021	Peconic Lane, Row 2 Flr. 3	1	68	58	10
F-022	Peconic Lane, Row 1 Flr. 1	1	61	57	4
F-023	Peconic Lane, Row 1 Flr. 2	1	68	59	10
F-024	Peconic Lane, Row 1 Flr. 3	1	71	61	10
F-025	Noble Way, Row 1 Flr. 1	1	65	60	5
F-026	Noble Way, Row 1 Flr. 2	1	73	62	11
F-027	Noble Way, Row 1 Flr. 3	1	75	63	12
F-028	Noble Way, Row 1 Flr. 1	1	63	59	5
F-029	Noble Way, Row 1 Flr. 2	1	69	60	10
F-030	Noble Way, Row 1 Flr. 3	1	73	61	12

Receptor Site Number	Site Address*	No. Units**	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)***
F-031	Noble Way, Row 2 Flr. 1	1	62	59	4
F-032	Noble Way, Row 2 Flr. 2	1	**67**	60	8
F-033	Noble Way, Row 2 Flr. 3	1	**71**	61	10
F-034	Noble Way, Row 2 Flr. 1	1	62	60	3
F-035	Noble Way, Row 2 Flr. 2	1	**66**	61	5
F-036	Noble Way, Row 2 Flr. 3	1	**69**	63	6
F-037	Noble Way, Row 2 Flr. 1	1	54	50	4
F-038	Noble Way, Row 2 Flr. 2	1	55	50	5
F-039	Noble Way, Row 2 Flr. 3	1	59	54	5
F-040	Noble Way, Row 2 Flr. 1	1	55	50	4
F-041	Noble Way, Row 2 Flr. 2	1	54	49	5
F-042	Noble Way, Row 2 Flr. 3	1	59	55	4
F-043	Noble Way, Row 2 Flr. 1	1	55	51	4
F-044	Noble Way, Row 2 Flr. 2	1	54	50	4
F-045	Noble Way, Row 2 Flr. 3	1	58	55	4
F-046	Noble Way, Row 2 Flr. 1	1	53	49	4
F-047	Noble Way, Row 2 Flr. 2	1	54	50	4
F-048	Noble Way, Row 2 Flr. 3	1	57	54	3
F-049	Tuckahoe Drive, Row 2 Flr. 1	1	59	55	4
F-050	Tuckahoe Drive, Row 2 Flr. 2	1	63	55	8
F-051	Tuckahoe Drive. Row 2 Flr. 3	1	**67**	58	10
F-052	Tuckahoe Drive. Row 2 Flr. 1	1	56	53	3
F-053	Tuckahoe Drive. Row 2 Flr. 2	1	59	52	6
F-054	Tuckahoe Drive. Row 2 Flr. 3	1	62	56	6
F-055	Tuckahoe Drive. Row 2 Flr. 1	1	55	52	3
F-056	Tuckahoe Drive. Row 2 Flr. 2	1	56	52	5
F-057	Tuckahoe Drive. Row 2 Flr. 3	1	60	56	4
F-058	Tuckahoe Drive. Row 2 Flr. 1	1	58	56	2
F-059	Tuckahoe Drive. Row 2 Flr. 2	1	59	57	2
F-060	Tuckahoe Drive. Row 2 Flr. 3	1	62	60	2
F-061	Tuckahoe Drive. Row 3 Flr. 1	1	55	54	1

Receptor Site Number	Site Address*	No. Units**	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)***
F-062	Tuckahoe Drive. Row 3 Flr. 2	1	56	55	1
F-063	Tuckahoe Drive. Row 3 Flr. 3	1	59	58	1
F-064	Tuckahoe Drive. Row 3 Flr. 1	1	55	55	1
F-065	Tuckahoe Drive. Row 3 Flr. 2	1	57	56	1
F-066	Tuckahoe Drive. Row 3 Flr. 3	1	59	58	1
F-067	Tuckahoe Drive. Row 3 Flr. 1	1	55	55	1
F-068	Tuckahoe Drive. Row 3 Flr. 2	1	57	56	0
F-069	Tuckahoe Drive. Row 3 Flr. 3	1	59	59	0
F-070	Tuckahoe Drive. Row 3 Flr. 1	1	55	55	1
F-071	Tuckahoe Drive. Row 3 Flr. 2	1	57	57	0
F-072	Tuckahoe Drive. Row 3 Flr. 3	1	59	59	0
F-073	Noble Way, Row 1 Flr. 1	1	**68**	62	6
F-074	Noble Way, Row 1 Flr. 2	1	**77**	64	12
F-075	Noble Way, Row 1 Flr. 3	1	**78**	**68**	11
F-076	Noble Way, Row 1 Flr. 4	N/A*	**78**	**76**	3
F-077	Noble Way, Row 1 Flr. 1	1	**69**	63	6
F-078	Noble Way, Row 1 Flr. 2	1	**77**	64	12
F-079	Noble Way, Row 1 Flr. 3	1	**78**	**68**	10
F-080	Noble Way, Row 1 Flr. 4	N/A*	**78**	**76**	2
F-081	Noble Way, Row 1 Flr. 1	1	**69**	63	7
F-082	Noble Way, Row 1 Flr. 2	1	**77**	64	12
F-083	Noble Way, Row 1 Flr. 3	1	**78**	**68**	10
F-084	Noble Way, Row 1 Flr. 4	N/A*	**78**	**76**	2
F-085	Noble Way, Row 1 Flr. 1	1	**70**	63	8
F-086	Noble Way, Row 1 Flr. 2	1	**77**	65	12
F-087	Noble Way, Row 1 Flr. 3	1	**78**	**69**	9
F-088	Noble Way, Row 1 Flr. 4	N/A*	**78**	**77**	2
F-089	Noble Way, Row 2 Flr. 1	1	55	55	1
F-090	Noble Way, Row 2 Flr. 2	1	55	55	1
F-091	Noble Way, Row 2 Flr. 3	1	58	57	1

Receptor Site Number	Site Address*	No. Units**	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)***
F-092	Noble Way, Row 2 Flr. 4	N/A*	63	0	0
F-093	Noble Way, Row 2 Flr. 1	1	56	56	1
F-094	Noble Way, Row 2 Flr. 2	1	55	55	1
F-095	Noble Way, Row 2 Flr. 3	1	59	59	1
F-096	Noble Way, Row 2 Flr. 1	1	56	56	1
F-096a	Noble Way, Row 2 Flr. 4	N/A*	62	62	1
F-097	Noble Way, Row 2 Flr. 2	1	55	55	1
F-098	Noble Way, Row 2 Flr. 3	1	59	59	1
F-099	Noble Way, Row 2 Flr. 4	N/A*	62	62	0
F-100	Noble Way, Row 2 Flr. 1	1	56	55	0
F-101	Noble Way, Row 2 Flr. 2	1	56	56	0
F-102	Noble Way, Row 2 Flr. 3	1	59	58	0
F-103	Noble Way, Row 2 Flr. 4	N/A*	63	62	0
F-104	Rampasture Drive, Row 2 Flr. 1	1	59	56	3
F-105	Rampasture Drive, Row 2 Flr. 2	1	61	58	4
F-106	Rampasture Drive, Row 2 Flr. 3	1	64	59	4
F-107	Rampasture Drive, Row 2 Flr. 1	1	59	56	3
F-108	Rampasture Drive, Row 2 Flr. 2	1	61	57	4
F-109	Rampasture Drive, Row 2 Flr. 3	1	63	58	5
F-110	Rampasture Drive, Row 2 Flr. 1	1	60	56	4
F-111	Rampasture Drive, Row 2 Flr. 2	1	62	57	5
F-112	Rampasture Drive, Row 2 Flr. 3	1	64	58	6
F-113	Rampasture Drive, Row 2 Flr. 1	1	62	59	4
F-114	Rampasture Drive, Row 2 Flr. 2	1	64	60	4
F-115	Rampasture Drive, Row 2 Flr. 3	1	**67**	62	5
F-116	Rampasture Drive, Row 2 Flr. 1	1	53	53	0
F-117	Rampasture Drive, Row 2 Flr. 2	1	56	56	0
F-118	Rampasture Drive, Row 2 Flr. 3	1	58	58	0
F-119	Rampasture Drive, Row 2 Flr. 1	1	54	54	0
F-120	Rampasture Drive, Row 2 Flr. 2	1	56	56	0

Receptor Site Number	Site Address*	No. Units**	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)***
F-121	Rampasture Drive, Row 2 Flr. 3	1	58	58	0
F-122	Rampasture Drive, Row 2 Flr. 1	1	55	55	0
F-123	Rampasture Drive, Row 2 Flr. 2	1	57	57	0
F-124	Rampasture Drive, Row 2 Flr. 3	1	59	59	0
F-125	Rampasture Drive, Row 2 Flr. 1	1	58	57	1
F-126	Rampasture Drive, Row 2 Flr. 2	1	60	59	2
F-127	Rampasture Drive, Row 2 Flr. 3	1	62	60	2
F-128	44 Briscoe Lane, Row 1, Flr. 1	1	**67**	**67**	0

* All land use is multi-family residential, except for F-128, which is a single-family home on Briscoe Lane.
** Fourth floor units are located above the point-of-intersection created by the projection of a 30-foot high noise barrier onto the façade of the building containing those units. Consistent with VDOT policy, only those units below the point-of-intersection were included in the feasibility and reasonableness determination for Potential Noise Barrier F. Consequently, the number of dwelling units for 4th floor receptors is not applicable ("N/A") to the feasibility and reasonableness determination.
*** Rounding of decibels may make some subtractions appear incorrect

Table 7: Receptor Site Locations

Receptor Site Number	Site Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
F-001	Peconic Lane, Row 1 Flr. 1	11,768,719.91	6,797,350.24	247.35
F-002	Peconic Lane, Row 1 Flr. 2	11,768,719.91	6,797,350.24	247.35
F-003	Peconic Lane, Row 1 Flr. 3	11,768,719.91	6,797,350.24	247.35
F-004	Peconic Lane, Row 1 Flr. 1	11,768,759.49	6,797,393.46	248.38
F-005	Peconic Lane, Row 1 Flr. 2	11,768,759.49	6,797,393.46	248.38
F-006	Peconic Lane, Row 1 Flr. 3	11,768,759.49	6,797,393.46	248.38
F-007	Peconic Lane, Row 1 Flr. 1	11,768,782.93	6,797,421.07	248.99
F-008	Peconic Lane, Row 1 Flr. 2	11,768,782.93	6,797,421.07	248.99
F-009	Peconic Lane, Row 1 Flr. 3	11,768,782.93	6,797,421.07	248.99
F-010	Peconic Lane, Row 1 Flr. 1	11,768,823.04	6,797,463.26	249.89
F-011	Peconic Lane, Row 1 Flr. 2	11,768,823.04	6,797,463.26	249.89
F-012	Peconic Lane, Row 1 Flr. 3	11,768,823.04	6,797,463.26	249.89
F-013	Peconic Lane, Row 2 Flr. 1	11,768,663.66	6,797,400.76	250.40
F-014	Peconic Lane, Row 2 Flr. 2	11,768,663.66	6,797,400.76	250.40
F-015	Peconic Lane, Row 2 Flr. 3	11,768,663.66	6,797,400.76	250.40
F-016	Peconic Lane, Row 2 Flr. 1	11,768,703.24	6,797,443.99	250.22
F-017	Peconic Lane, Row 2 Flr. 2	11,768,703.24	6,797,443.99	250.22
F-018	Peconic Lane, Row 2 Flr. 3	11,768,703.24	6,797,443.99	250.22
F-019	Peconic Lane, Row 2 Flr. 1	11,768,726.68	6,797,471.59	251.10
F-020	Peconic Lane, Row 2 Flr. 2	11,768,726.68	6,797,471.59	251.10
F-021	Peconic Lane, Row 2 Flr. 3	11,768,726.68	6,797,471.59	251.10
F-022	Peconic Lane, Row 1 Flr. 1	11,768,766.79	6,797,513.78	251.10
F-023	Peconic Lane, Row 1 Flr. 2	11,768,766.79	6,797,513.78	251.10
F-024	Peconic Lane, Row 1 Flr. 3	11,768,766.79	6,797,513.78	251.10
F-025	Noble Way, Row 1 Flr. 1	11,768,735.71	6,797,638.08	252.51
F-026	Noble Way, Row 1 Flr. 2	11,768,735.71	6,797,638.08	252.51
F-027	Noble Way, Row 1 Flr. 3	11,768,735.71	6,797,638.08	252.51
F-028	Noble Way, Row 1 Flr. 1	11,768,693.35	6,797,675.58	252.76
F-029	Noble Way, Row 1 Flr. 2	11,768,693.35	6,797,675.58	252.76
F-030	Noble Way, Row 1 Flr. 3	11,768,693.35	6,797,675.58	252.76
F-031	Noble Way, Row 2 Flr. 1	11,768,665.14	6,797,701.19	253.04

Receptor Site Number	Site Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
F-032	Noble Way, Row 2 Flr. 2	11,768,665.14	6,797,701.19	253.04
F-033	Noble Way, Row 2 Flr. 3	11,768,665.14	6,797,701.19	253.04
F-034	Noble Way, Row 2 Flr. 1	11,768,625.64	6,797,736.35	253.59
F-035	Noble Way, Row 2 Flr. 2	11,768,625.64	6,797,736.35	253.59
F-036	Noble Way, Row 2 Flr. 3	11,768,625.64	6,797,736.35	253.59
F-037	Noble Way, Row 2 Flr. 1	11,768,683.63	6,797,581.83	251.98
F-038	Noble Way, Row 2 Flr. 2	11,768,683.63	6,797,581.83	251.98
F-039	Noble Way, Row 2 Flr. 3	11,768,683.63	6,797,581.83	251.98
F-040	Noble Way, Row 2 Flr. 1	11,768,641.27	6,797,619.33	252.57
F-041	Noble Way, Row 2 Flr. 2	11,768,641.27	6,797,619.33	252.57
F-042	Noble Way, Row 2 Flr. 3	11,768,641.27	6,797,619.33	252.57
F-043	Noble Way, Row 2 Flr. 1	11,768,613.05	6,797,644.94	252.83
F-044	Noble Way, Row 2 Flr. 2	11,768,613.05	6,797,644.94	252.83
F-045	Noble Way, Row 2 Flr. 3	11,768,613.05	6,797,644.94	252.83
F-046	Noble Way, Row 2 Flr. 1	11,768,573.56	6,797,680.10	251.76
F-047	Noble Way, Row 2 Flr. 2	11,768,573.56	6,797,680.10	251.76
F-048	Noble Way, Row 2 Flr. 3	11,768,573.56	6,797,680.10	251.76
F-049	Tuckahoe Drive, Row 2 Flr. 1	11,768,653.77	6,797,545.03	251.84
F-050	Tuckahoe Drive, Row 2 Flr. 2	11,768,653.77	6,797,545.03	251.84
F-051	Tuckahoe Drive. Row 2 Flr. 3	11,768,653.77	6,797,545.03	251.84
F-052	Tuckahoe Drive. Row 2 Flr. 1	11,768,611.40	6,797,582.53	252.16
F-053	Tuckahoe Drive. Row 2 Flr. 2	11,768,611.40	6,797,582.53	252.16
F-054	Tuckahoe Drive. Row 2 Flr. 3	11,768,611.40	6,797,582.53	252.16
F-055	Tuckahoe Drive. Row 2 Flr. 1	11,768,583.19	6,797,608.13	252.53
F-056	Tuckahoe Drive. Row 2 Flr. 2	11,768,583.19	6,797,608.13	252.53
F-057	Tuckahoe Drive. Row 2 Flr. 3	11,768,583.19	6,797,608.13	252.53
F-058	Tuckahoe Drive. Row 2 Flr. 1	11,768,543.70	6,797,643.29	253.15
F-059	Tuckahoe Drive. Row 2 Flr. 2	11,768,543.70	6,797,643.29	253.15
F-060	Tuckahoe Drive. Row 2 Flr. 3	11,768,543.70	6,797,643.29	253.15
F-061	Tuckahoe Drive. Row 3 Flr. 1	11,768,601.68	6,797,488.78	251.20
F-062	Tuckahoe Drive. Row 3 Flr. 2	11,768,601.68	6,797,488.78	251.20

Receptor Site Number	Site Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
F-063	Tuckahoe Drive. Row 3 Flr. 3	11,768,601.68	6,797,488.78	251.20
F-064	Tuckahoe Drive. Row 3 Flr. 1	11,768,559.32	6,797,526.28	252.42
F-065	Tuckahoe Drive. Row 3 Flr. 2	11,768,559.32	6,797,526.28	252.42
F-066	Tuckahoe Drive. Row 3 Flr. 3	11,768,559.32	6,797,526.28	252.42
F-067	Tuckahoe Drive. Row 3 Flr. 1	11,768,531.11	6,797,551.88	252.76
F-068	Tuckahoe Drive. Row 3 Flr. 2	11,768,531.11	6,797,551.88	252.76
F-069	Tuckahoe Drive. Row 3 Flr. 3	11,768,531.11	6,797,551.88	252.76
F-070	Tuckahoe Drive. Row 3 Flr. 1	11,768,491.61	6,797,587.04	253.34
F-071	Tuckahoe Drive. Row 3 Flr. 2	11,768,491.61	6,797,587.04	253.34
F-072	Tuckahoe Drive. Row 3 Flr. 3	11,768,491.61	6,797,587.04	253.34
F-073	Noble Way, Row 1 Flr. 1	11,768,772.17	6,797,775.32	253.34
F-074	Noble Way, Row 1 Flr. 2	11,768,772.17	6,797,775.32	253.34
F-075	Noble Way, Row 1 Flr. 3	11,768,772.17	6,797,775.32	253.34
F-076	Noble Way, Row 1 Flr. 4	11,768,772.17	6,797,775.32	253.34
F-077	Noble Way, Row 1 Flr. 1	11,768,763.14	6,797,826.71	253.87
F-078	Noble Way, Row 1 Flr. 2	11,768,763.14	6,797,826.71	253.87
F-079	Noble Way, Row 1 Flr. 3	11,768,763.14	6,797,826.71	253.87
F-080	Noble Way, Row 1 Flr. 4	11,768,763.14	6,797,826.71	253.87
F-081	Noble Way, Row 1 Flr. 1	11,768,759.67	6,797,843.03	254.04
F-082	Noble Way, Row 1 Flr. 2	11,768,759.67	6,797,843.03	254.04
F-083	Noble Way, Row 1 Flr. 3	11,768,759.67	6,797,843.03	254.04
F-084	Noble Way, Row 1 Flr. 4	11,768,759.67	6,797,843.03	254.04
F-085	Noble Way, Row 1 Flr. 1	11,768,749.60	6,797,896.50	254.56
F-086	Noble Way, Row 1 Flr. 2	11,768,749.60	6,797,896.50	254.56
F-087	Noble Way, Row 1 Flr. 3	11,768,749.60	6,797,896.50	254.56
F-088	Noble Way, Row 1 Flr. 4	11,768,749.60	6,797,896.50	254.56
F-089	Noble Way, Row 2 Flr. 1	11,768,700.29	6,797,761.09	253.56
F-090	Noble Way, Row 2 Flr. 2	11,768,700.29	6,797,761.09	253.56
F-091	Noble Way, Row 2 Flr. 3	11,768,700.29	6,797,761.09	253.56
F-092	Noble Way, Row 2 Flr. 4	11,768,700.29	6,797,761.09	253.56
F-093	Noble Way, Row 2 Flr. 1	11,768,691.27	6,797,812.47	254.12

Receptor Site Number	Site Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
F-094	Noble Way, Row 2 Flr. 2	11,768,691.27	6,797,812.47	254.12
F-095	Noble Way, Row 2 Flr. 3	11,768,691.27	6,797,812.47	254.12
F-096	Noble Way, Row 2 Flr. 1	11,768,687.79	6,797,828.79	254.21
F-096a	Noble Way, Row 2 Flr. 4	11,768,691.27	6,797,812.47	254.12
F-097	Noble Way, Row 2 Flr. 2	11,768,687.79	6,797,828.79	254.21
F-098	Noble Way, Row 2 Flr. 3	11,768,687.79	6,797,828.79	254.21
F-099	Noble Way, Row 2 Flr. 4	11,768,687.79	6,797,828.79	254.21
F-100	Noble Way, Row 2 Flr. 1	11,768,677.72	6,797,882.27	254.63
F-101	Noble Way, Row 2 Flr. 2	11,768,677.72	6,797,882.27	254.63
F-102	Noble Way, Row 2 Flr. 3	11,768,677.72	6,797,882.27	254.63
F-103	Noble Way, Row 2 Flr. 4	11,768,677.72	6,797,882.27	254.63
F-104	Rampasture Drive, Row 2 Flr. 1	11,768,324.08	6,797,748.67	262.65
F-105	Rampasture Drive, Row 2 Flr. 2	11,768,324.08	6,797,748.67	262.65
F-106	Rampasture Drive, Row 2 Flr. 3	11,768,324.08	6,797,748.67	262.65
F-107	Rampasture Drive, Row 2 Flr. 1	11,768,363.66	6,797,791.90	255.79
F-108	Rampasture Drive, Row 2 Flr. 2	11,768,363.66	6,797,791.90	255.79
F-109	Rampasture Drive, Row 2 Flr. 3	11,768,363.66	6,797,791.90	255.79
F-110	Rampasture Drive, Row 2 Flr. 1	11,768,387.97	6,797,819.07	255.76
F-111	Rampasture Drive, Row 2 Flr. 2	11,768,387.97	6,797,819.07	255.76
F-112	Rampasture Drive, Row 2 Flr. 3	11,768,387.97	6,797,819.07	255.76
F-113	Rampasture Drive, Row 2 Flr. 1	11,768,427.20	6,797,861.69	255.95
F-114	Rampasture Drive, Row 2 Flr. 2	11,768,427.20	6,797,861.69	255.95
F-115	Rampasture Drive, Row 2 Flr. 3	11,768,427.20	6,797,861.69	255.95
F-116	Rampasture Drive, Row 2 Flr. 1	11,768,265.66	6,797,800.06	260.86
F-117	Rampasture Drive, Row 2 Flr. 2	11,768,265.66	6,797,800.06	260.86
F-118	Rampasture Drive, Row 2 Flr. 3	11,768,265.66	6,797,800.06	260.86
F-119	Rampasture Drive, Row 2 Flr. 1	11,768,305.24	6,797,843.29	255.11
F-120	Rampasture Drive, Row 2 Flr. 2	11,768,305.24	6,797,843.29	255.11
F-121	Rampasture Drive, Row 2 Flr. 3	11,768,305.24	6,797,843.29	255.11
F-122	Rampasture Drive, Row 2 Flr. 1	11,768,330.85	6,797,870.03	256.06
F-123	Rampasture Drive, Row 2 Flr. 2	11,768,330.85	6,797,870.03	256.06

Receptor Site Number	Site Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
F-124	Rampasture Drive, Row 2 Flr. 3	11,768,330.85	6,797,870.03	256.06
F-125	Rampasture Drive, Row 2 Flr. 1	11,768,367.92	6,797,912.21	256.32
F-126	Rampasture Drive, Row 2 Flr. 2	11,768,367.92	6,797,912.21	256.32
F-127	Rampasture Drive, Row 2 Flr. 3	11,768,367.92	6,797,912.21	256.32
F-128	44 Briscoe Lane, Row 1 Flr. 1	11,768,661.14	6,796,599.71	251.77

Table 8: Sound Attenuation Line

Potential Noise Barrier F

Approximate Station No. (I-95 SB)	Barrier Coordinates (US Survey Feet) (NAD 83 Virginia State Plane North)		Elevation (feet)		Estimated Height Above Ground (feet)
	X	Y	Estimated Ground	Top of Barrier	
3483+12.38	11,768,974.39	6,797,110.41	248.2	264.2	16.0
3483+50.00	11,768,969.33	6,797,146.49	248.8	264.8	16.0
3484+00.00	11,768,962.31	6,797,194.39	249.1	265.1	16.0
3484+50.00	11,768,954.90	6,797,242.23	250.3	266.3	16.0
3485+00.00	11,768,947.08	6,797,290.01	250.7	266.7	16.0
3485+50.00	11,768,938.77	6,797,337.71	251.0	269.0	18.0
3486+00.00	11,768,929.94	6,797,385.31	251.7	269.7	18.0
3486+50.00	11,768,919.66	6,797,433.75	252.5	270.5	18.0
3486+91.59	11,768,909.61	6,797,474.16	254.1	272.1	18.0
3488+00.00	11,768,884.32	6,797,579.69	256.8	274.8	18.0
3488+50.00	11,768,873.92	6,797,628.60	257.2	275.2	18.0
3489+00.00	11,768,864.45	6,797,677.70	257.2	275.2	18.0
3489+50.00	11,768,854.98	6,797,726.79	257.9	275.9	18.0
3490+00.00	11,768,845.52	6,797,775.88	258.8	276.8	18.0
3490+50.00	11,768,836.05	6,797,824.97	258.6	276.6	18.0
3491+00.00	11,768,826.58	6,797,874.07	258.9	276.9	18.0
3491+50.00	11,768,817.86	6,797,923.30	257.9	275.9	18.0
3492+31.07	11,768,804.74	6,798,003.33	257.3	275.3	18.0
3493+51.76	11,768,783.22	6,798,122.08	255.1	271.1	16.0
3495+02.55	11,768,757.53	6,798,270.69	256.8	272.8	16.0

Figure 1
CNE F
Proposed Barrier F

Noise Abatement Design Study
I-95 Southbound CD Lanes
Design-Build Project
(UPC 101595)

- Impacted and 5 or 6 dBA Insertion Loss
- Impacted and 7 dBA or more Insertion Loss
- Impacted and Not Benefited
- Benefited but Not Impacted
- Not Benefited or Impacted

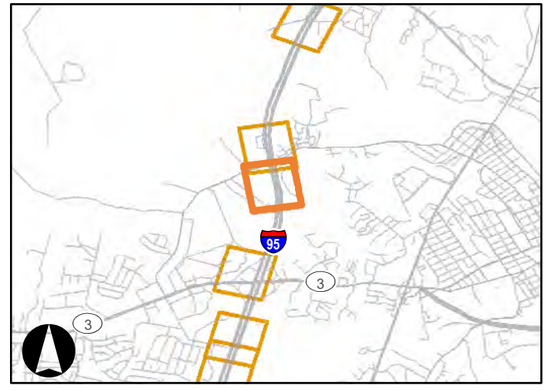
Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receiver Labels are in order of Leader Occurrence.

- ST# Measurement Site
- Common Noise Environment (CNE) Areas

Noise Barriers
- Feasible and Reasonable
- Feasible and Not Reasonable
- Not Feasible
- Feasible and Reasonable Under Different Project

0 100 200 400 Feet



U.S. Department of Transportation Federal Highway Administration

Description: CNE FH North, Potential Barrier FH North Extension

Common Noise Environment (CNE) FH North is located on the northbound side of I-95, north of the Fall Hill Avenue overpass. Existing land use consists of the Hughey Court townhomes and the Bragg Hill Family Center. This CNE is located behind an existing 260-foot long noise barrier that was constructed part of the Fall Hill Avenue Widening Project (UPC 88699). Since the Bragg Hill Family Center was beyond the project limit for the Fall Hill Widening Project, it was not evaluated as part of that project. CNE FH North was previously identified as CNE E in the preliminary noise analysis.

Noise impact is expected to occur for some residential receptors behind Noise Barrier FH North. Therefore, this existing barrier was evaluated according to VDOT's policy in such cases, which requires that the existing barrier be evaluated to determine if it meets VDOT's feasibility and reasonableness requirements. In particular, at least 50 percent of the receivers impacted without the barrier in place must be benefited with five decibels of noise reduction by the existing barrier, and at least one receptor must achieve the noise reduction design goal of seven decibels. Existing Noise Barrier FH North was evaluated in this manner, and was found to not meet the acoustical feasibility goal.

Per VDOT policy, when an existing noise barrier is not physically impacted by the project but the project creates noise impacts that the existing noise barrier does not completely address, any modifications to, or replacement of, the noise barrier would be subject to the cost-effectiveness criterion. In this case, only the incremental square footage to extend the existing noise barrier to the north and only the additional benefited receptors would be considered in the reasonableness determination.

If Barrier FH North were extended to the north at a height of 16 feet and for a length of 404 feet, the incremental amount of barrier would benefit nine additional townhomes in Hughey Court (Receptors FH-091, FH-096 and FH-097). Six of the nine townhomes are exposed to noise impact and three of the impacted townhomes would receive a noise reduction of 7 decibels. The additional noise barrier also would benefit two recreational receptors – the playground at Hughey Court (with 6 decibels of noise reduction) and the playground at the Bragg Hill Community Center (with 10 decibels of noise reduction). The barrier extension would have a surface area of 6,466 square feet and benefit 11 receptors. With a SF/BR value of 588, the extension to Noise Barrier FH North is reasonable.

This abbreviated report presents a preliminary design for the potential extension to Noise Barrier FH North to mitigate the predicted noise impact at residential and recreational receptors. This report provides a summary table, as well as tables of predicted sound levels, receptor coordinates, and the sound attenuation line. Additional details about the noise study may be found in the Noise Abatement Design Report for Noise Barrier F, included in Appendix D to the full report. Such additional details include narratives and tables that describe and/or summarize the results of the noise measurements, the noise model validation, and traffic data used as input to the FHWA TNM Version 2.5.

Normally as part of a final design study and after such a determination has been made, VDOT

would survey the affected property owners and residents to solicit their viewpoints about the proposed noise barrier and whether they support barrier construction. However in this situation, the pending I-95 Northbound Rappahannock River Crossing Project (UPC 105510) may affect the requirements for noise abatement in this community. As a result, the final design for Noise Barrier FH North Extension will be reevaluated as part of that project's final design with the community survey taking place at that time, as necessary. The anticipated completion of the design study for the northbound project is early-2021. A notification letter was mailed to the property owners and residents of benefited receptors to convey the information described in this paragraph.

Table 1: Summary of Results – Potential Noise Barrier FH North Extension provides an overview of the preliminary design for potential extension of Noise Barrier FH North.

Table 1: Summary of Results – Potential Noise Barrier FH North Extension

Impacted residential receptors with NAC of 67 dBA, Leq	9
Impacted non-residential residential receptors with NAC of 67 dBA, Leq	2
Impacts due to substantial increases in existing noise	0
Impacted residential receptors receiving 5 dBA IL or more	6
Impacted non-residential receptors receiving 5 dBA IL or more	2
Not Impacted receptors receiving 5 dBA IL or more	3
Total benefited noise-sensitive receptors receiving 5 dBA IL or more	11
Are 50% Impacted receptors receiving 5 dB IL (Yes/No, %)	Yes, 73%
Impacted receptors receiving 7 dBA or more IL	4
Total Barrier Surface Area (Square Feet)	6,466
Barrier Surface Area (SF) per Benefited Receptor (SF/BR)	588
Is Barrier Reasonable (Surface Area ≤1600 SF/BR)?	Yes
Average Noise Reduction at benefited receptors (dB)	6.4
Total Barrier Length (Feet)	404
Minimum Barrier Height (Feet)	16
Maximum Barrier Height (Feet)	16
Average Barrier Height (Feet)	16
Cost per Square Foot (state-wide average as of 2/23/2017)	$42
Total Barrier Cost	$271,572

Table 2: Predicted Loudest-hour Noise Levels in CNE FH NORTH provides the details of the predicted noise levels at receptors behind Potential Barrier FH North Extension. Table 2 includes the address or site description, the site number for reference with the attached figure, the number of residential or recreational units associated with the receptor, the predicted design-year (2040) loudest-hour L_{eq} without and with the potential noise barrier, and the barrier insertion loss. Sound levels in Table 2 are colored red to indicate receptors for which the loudest hour L_{eq} approaches or exceeds the FHWA Noise Abatement Criteria (NAC). Receptors' insertion loss

values in Table 2 are shown in bold with shaded cells to indicate benefited receptors (receptors that receive 5 dBA, or more, of insertion loss from the noise barrier). Sheet 7 of 13 in Figure 1 of the main body of the report shows the locations of receptors behind Barrier FH North Extension, as well as the noise barrier and the adjacent Project roadways. The coordinates of the modeled receptor locations contained within the TNM are shown in *Table 3: Receptor Site Locations*. The preliminary heights and top elevation of the potential barrier are given in *Table 4: Sound Attenuation Line.*

Table 2: Predicted Loudest Hour Noise Levels in CNE FH NORTH

Receptor Site Number	Site Address	No. Units	2040 Loudest-hour Noise Levels		
			No-Barrier L_{eq} (dBA)	With-Barrier L_{eq} (dBA)	Insertion Loss (dB)*
FH-079	400 Bragg Hill Dr, Fredericksburg	1	**77**	66	**10**
FH-083	132 Hughey Ct, Fredericksburg	3	**66**	**66**	**0**
FH-091	115 Hughey Ct, Fredericksburg	3	63	58	**5**
FH-096	214 Brighton Sq, Fredericksburg	3	**68**	62	**7**
FH-097	220 Brighton Sq, Fredericksburg	3	**70**	63	**7**
FH-106	Tennis court on Bragg Hill Dr	1	**68**	61	**6**

* Rounding of decibels may make some subtractions appear incorrect

Table 3: Receptor Site Locations in CNE FH NORTH

Receptor Site Number	Site Address	NAD 83 Virginia State Plane Coordinates North (feet)		
		X	Y	Z
FH-079	400 Bragg Hill Dr, Fredericksburg	11,768,970.00	6,799,571.50	250.85
FH-083	132 Hughey Ct, Fredericksburg	11,769,160.00	6,799,031.50	249.38
FH-091	115 Hughey Ct, Fredericksburg	11,769,228.00	6,799,252.50	248.69
FH-096	214 Brighton Sq, Fredericksburg	11,769,190.00	6,799,298.50	252.07
FH-097	220 Brighton Sq, Fredericksburg	11,769,163.00	6,799,350.50	249.67
FH-106	Tennis court on Bragg Hill Dr	11,769,221.00	6,799,435.50	247.34

Table 4: Sound Attenuation Line for Potential Noise Barrier FH North Extension

Approximate Station No. (I-95 SB)	Barrier Coordinates (feet) (NAD 83 Virginia State Plane North)		Elevation (feet)		Estimated Height Above Ground (feet)
	X	Y	Estimated Ground	Top of Barrier	
	11,768,980.00	6,799,245.50	250.0	266.0	16.01
	11,768,963.00	6,799,344.00	242.8	258.8	16.01
	11,768,948.00	6,799,443.50	242.1	258.1	16.01
	11,768,929.00	6,799,544.00	248.4	264.4	16.01
	11,768,915.00	6,799,644.00	256.2	272.2	16.01

APPENDIX E NOISE MEASUREMENT DATA AND CALIBRATION CERTIFICATES

This appendix includes data acquired during the noise measurement program, including noise monitor output, site sketches, photographs, field noise data sheets, traffic count data sheets, and calibration certificates.

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-1 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: Culdesac @ end of Queensbury Ct DATE: 5/24/18

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	12:35	59.0					Lawn mower	
2	36	59.2						
3	37	58.3	X				Siren, lawn mower	
4	38	59.5	√				motorcycle on trks need	
5	39	58.8	√				motorcycle NB	
6	40	59.3	√				lawn mower	
7	41	60.2						
8	42	58.1					Birds	
9	43	58.1	X				lawn mower idling	
10	44	59.1					motorcycle NB	
11	45	58.5					Birds	
12	46	58.5					prop airplane overhead	
13	47	59.4						
14	48	57.8					lawn mower kicked on	
15	49	59.6						
16	50	58.5						
17	51	58.7	X				lawn mower	
18	52	59.8	X					
19	53	59.1	X					
20	54	59.3	X					
21	55	59.8	X					
22	56	59.5	X					
23	57	59.2	X					
24	58	60.1	X					
25	59	60.4	X					
26	1:00	59.8	X					
27	01	59.5	X					
28	02	57.1						
29	03	58.5						
30	04							

Re-do test

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-1, ~~[illegible]~~ re-do 2nd half PERSONNEL: HTJ/CJB

ADDRESS/DESCRIPTION: Culdesac @ End of Queensbury Ct DATE: 5/24/18

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	1:10	57.8					prop plane	
2	11	57.9					loud birds	
3	12	59.3						
4	13	60.2					motorcycle NB	
5	14	58.7						
6	15	57.8						
7	16	58.6						
8	17	57.6						
9	18	58.7						
10	19	58.5						
11	20	58.0						
12	21	58.0						
13	22	58.6						
14								
15								
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21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

Data File #13 (+#12)

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: ______ MEASUREMENT SITE NO.: ST-1

ADDRESS: Coldesac @ end of Queensbury Ct

OWNER: ______

DESCRIPTION: culdesac, on pavement, ~~outside of~~

NOISE SOURCES: I-95 Traffic, lawn mower,

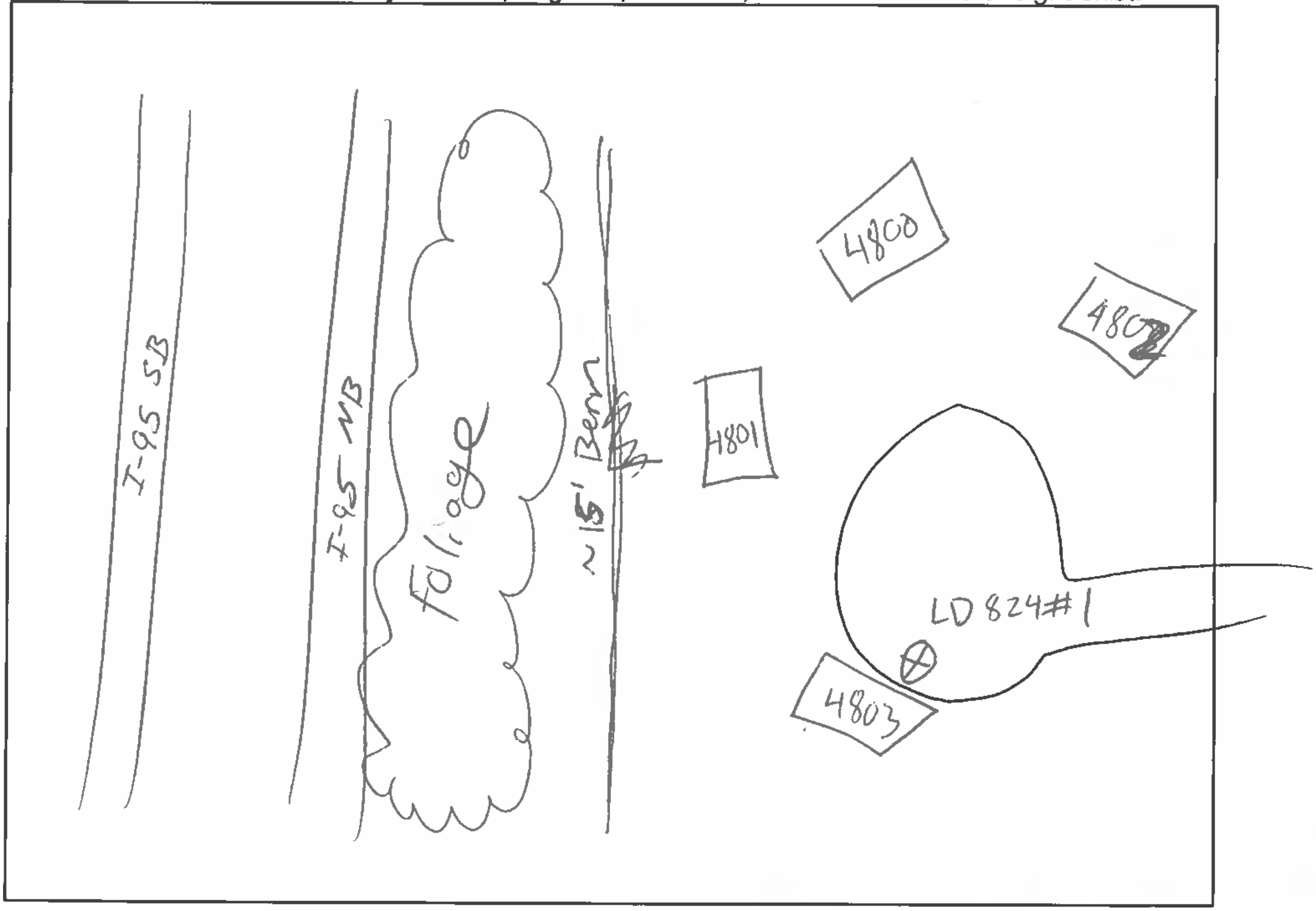
NOISE MONITOR: LD 824 # ______ S/N: ______

MICROPHONE: ______ S/N: ______

CALIBRATOR: ______ S/N: ______

TEMP. RANGE (°F): ______ WEATHER CONDITIONS: clear, breezy (1-3mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: ______ GPS COORDINATES: ______

Site M1: cul-de-sac at the end of Queensbury Court

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-1 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 24MAY2018
_____ PERSONNEL: GB(HT)

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: 1235

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	338	
Medium Trucks (6 Tires)	11	
Heavy Trucks (>6 Tires)	49	
Average speed (mph)		

Second Sample: 5 **minutes**
Start Time: 1242

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles		240
Medium Trucks (6 Tires)		15
Heavy Trucks (>6 Tires)		26
Average speed (mph)		

Third Sample: 5 **minutes**
Start Time: 1248

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	295	
Medium Trucks (6 Tires)	16	
Heavy Trucks (>6 Tires)	36	
Average speed (mph)		

Fourth Sample: 5 **minutes**
Start Time: 1254

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles		279
Medium Trucks (6 Tires)		11
Heavy Trucks (>6 Tires)		21
Average speed (mph)		

1312 280 A
10 MT
38 HT
} NB

58, 64, 69, 50, 67
57, 59, 53, 58, 53

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-2 PERSONNEL: HTJ/CJB

ADDRESS/DESCRIPTION: 11804 Berwick Ct DATE: 5/24/18

Data File #11

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	11:54	66.2					*Birds Chirping Throughout	check cal: 113.7
2	55	64.9						
3	56	65.2						
4	57	64.2						
5	58	64.3						
6	59	65.1						
7	12:00	63.4						
8	01	64.3						
9	02	65.3						
10	03	63.9						
11	04	64.8						
12	05	64.8						
13	06	64.4						
14	07	65.3						
15	08	64.7						
16	09	63.7						
17	10	64.6						
18	11	63.8						
19	12	64.7					motorcycle SNB	
20	13	64.4						
21	14	63.7						
22	15	64.9					Loud Truck	
23	16	64.6						
24	17	64.8					motorcycle NB	
25	18	64.1					Breeze through trees (rustling)	
26	19	63.0						
27	20	64.5						
28	21	65.0					motorcycle SB, prop plane overhead	
29	22	63.9						
30	23	64.9					bird on feeder nearby	

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

HARRIS MILLER MILLER & HANSON INC.

*may need to filter out birds

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-2

ADDRESS: 11804 Berwick Court

OWNER: _____

DESCRIPTION: Wooded backyard, deck is raised & then ground slopes down

NOISE SOURCES: I-95 Traffic, Birds (prominent)

NOISE MONITOR: LD 824 # _____ S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 80-81°F WEATHER CONDITIONS: clear, calm,

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.

PHOTOS: _____ GPS COORDINATES: _____

Site M2: backyard and patio at 11804 Berwick Court

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-2 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 24 MAY 2018
_____ PERSONNEL: CJB/HTJ

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: 1154

	Direction 1: SB	Direction 2: NB
Automobiles	288	
Medium Trucks (6 Tires)	11	
Heavy Trucks (>6 Tires)	48	
Average speed (mph)		

Second Sample: 5 **minutes**
Start Time: 1201

	Direction 1: SB	Direction 2: NB
Automobiles		240
Medium Trucks (6 Tires)		9
Heavy Trucks (>6 Tires)		35
Average speed (mph)		

Third Sample: 5 **minutes**
Start Time: 1207

	Direction 1: SB	Direction 2: NB
Automobiles	331	
Medium Trucks (6 Tires)	8	
Heavy Trucks (>6 Tires)	56	
Average speed (mph)		

Fourth Sample: 5 **minutes**
Start Time: 1214

	Direction 1: SB	Direction 2: NB
Automobiles		249
Medium Trucks (6 Tires)		10
Heavy Trucks (>6 Tires)		32
Average speed (mph)		

60, 62, 64, 57, 63
71, 68, 70, 72, 56

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-3 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: 11925 Burgess Lane, New Life Church DATE: 5/24/18

Data File #9, skip #8

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	9:16	67.8					*crickets throughout mst	Cal check: 114.0
2	17	67.9						
3	18	68.2						
4	19	67.2						
5	20	67.7						
6	21	67.5						
7	22	67.8						
8	23	68.2						
9	24	67.0						
10	25	67.4					Loud Truck	
11	26	68.0						
12	27	69.9						
13	28	67.1						
14	29	67.0						
15	30	67.5					Bouncing trailer, flat tire?	
16	31	67.2						
17	32	67.7						
18	33	68.4						
19	34	67.2						
20	35	68.0						
21	36	69.2						
22	37	67.7						
23	38	67.0						
24	39	66.7						
25	40	68.7						
26	41	66.6						
27	42	67.6						
28	43	67.2						
29	44	67.0						
30	45	66.7						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

* Data File #9
SKIP #8

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-3

ADDRESS: 11925 Burgess Lane, New Life Church

OWNER: _____

DESCRIPTION: Sports field

NOISE SOURCES: I-95 Traffic, Birds

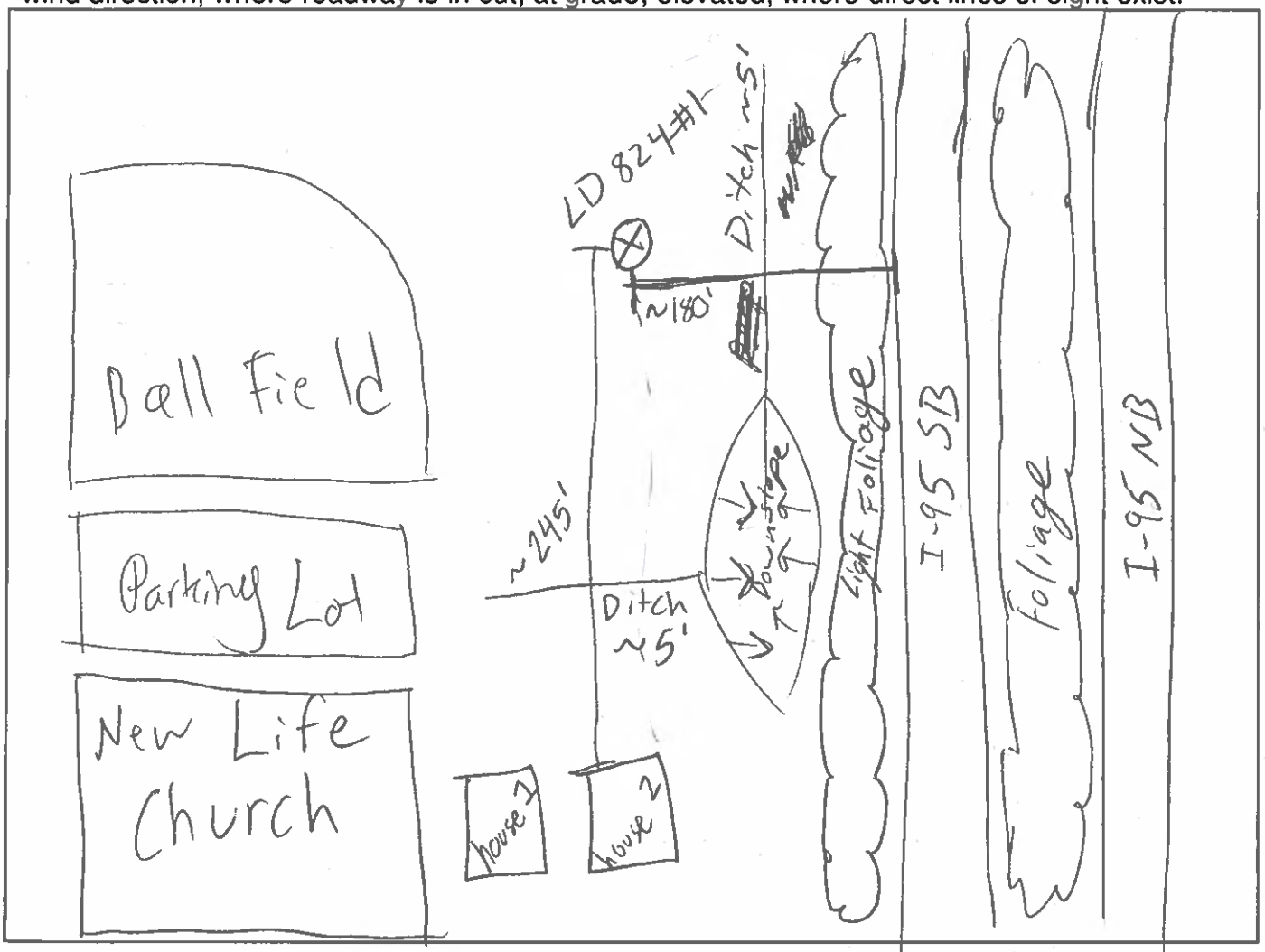
NOISE MONITOR: LD 824 # 1 S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 75-77°F WEATHER CONDITIONS: clear, breezy (1-3 mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M3: New Life in Christ Church at 11925 Burgess Lane
(church on right with 2 satellite buildings on left)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-3 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 24 MAY 2018
_____ PERSONNEL: CJB/HTJ

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: 9:16

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles		255
Medium Trucks (6 Tires)		10
Heavy Trucks (>6 Tires)		46
Average speed (mph)		

Second Sample: 5 **minutes**
Start Time: 923

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	243	
Medium Trucks (6 Tires)	17	
Heavy Trucks (>6 Tires)	27	
Average speed (mph)		

Third Sample: 5 **minutes**
Start Time: 929

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles		309
Medium Trucks (6 Tires)		11
Heavy Trucks (>6 Tires)		42
Average speed (mph)		

Fourth Sample: 5 **minutes**
Start Time: 935

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	258	
Medium Trucks (6 Tires)	9	
Heavy Trucks (>6 Tires)	35	
Average speed (mph)		

58, 54, 64, 67, 57,
58, 57, 59, 58, 66

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-4 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: Culdesac @ North End of Pickett St DATE: 5/24/18

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	1:48	61.5						check cal : 113.7
2	49	61.0						
3	50	60.4						
4	51	61.4					car pulled around in culdesac	
5	52	60.7					Birds, prop airplane	
6	53	64.1					large group of motorcycles NB (I95)	
7	54	61.8						
8	55	61.4						
9	56	62.0						
10	57	60.9					Break Squeel on I-95	
11	58	61.2						
12	59	60.3					Birds	
13	2:00	60.9						
14	01	61.5						
15	02	60.3						
16	03	62.2						
17	04	61.9						
18	05	63.8					motorcycle group NB	
19	06	61.6						
20	07	60.8						
21	08	61.0						
22	09	60.5						
23	10	59.5						
24	11	61.4						
25	12	62.9						
26	13	62.7						
27	14	62.4						
28	15	62.3						
29	16	62.4					Car starting + pulling around culdesac	
30	17	60.9						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-4

ADDRESS: Culdesac @ End of Pickett Street next to pool

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, light pedestrians, birds, ~~fan~~

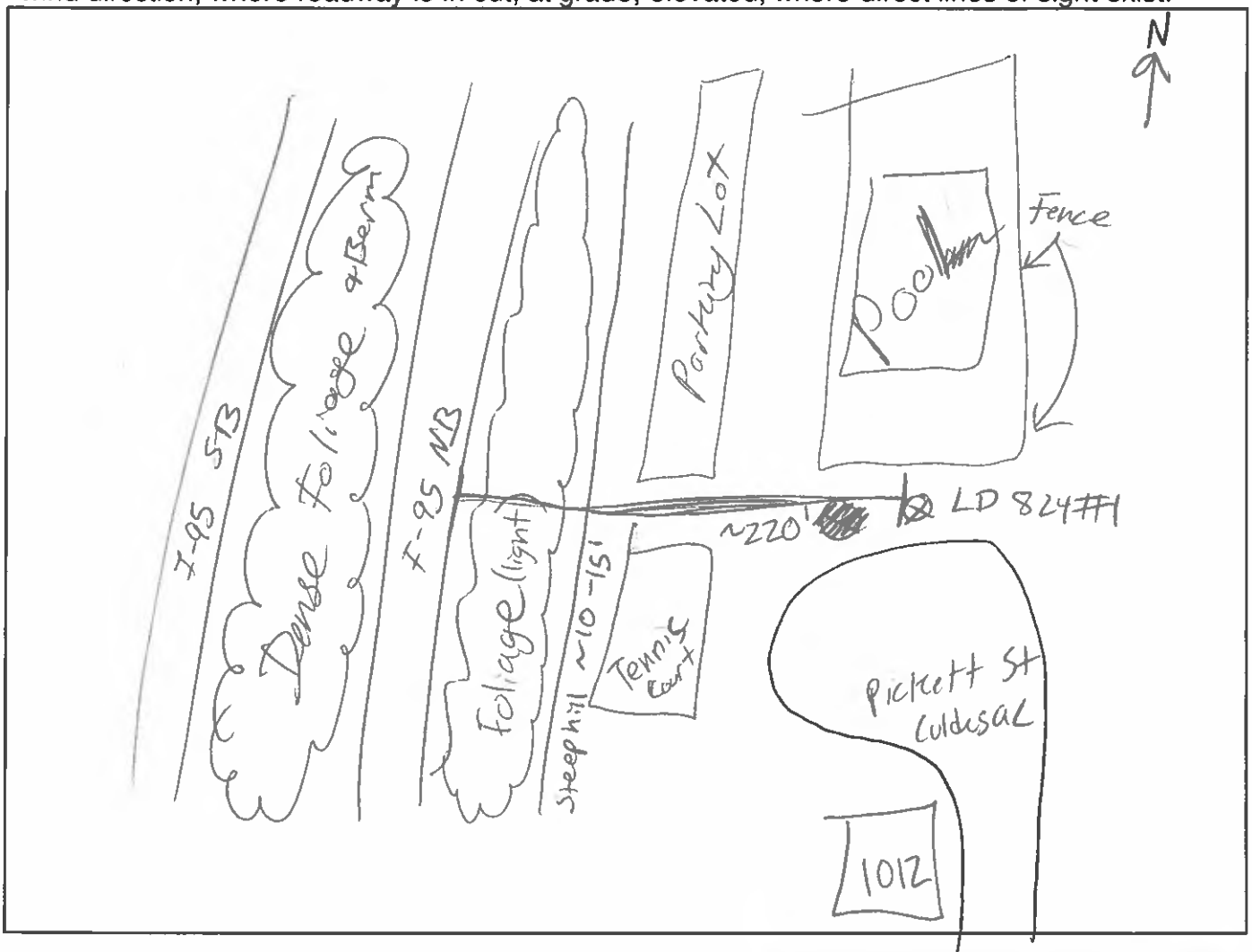
NOISE MONITOR: LD 824 # S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 83-84°F WEATHER CONDITIONS: clear, light breeze (1-2 mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M4: cul-de-sac at north end of Pickett Street
(looking west, with view of tennis court in the back left)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA:
MEASUREMENT SITE NO.: ST-4
ADDRESS/DESCRIPTION:

START TIME:
END TIME:
DATE: 24 MAY 2018
PERSONNEL: CJB/HTJ

ROADWAY: I95

	DIRECTION 1: SB	DIRECTION 2: NB
First Sample: 5 minutes **Start Time: 1348**		
Automobiles	354	
Medium Trucks (6 Tires)	6	
Heavy Trucks (>6 Tires)	40	
Average speed (mph)		
Second Sample: 5 minutes **Start Time: 1355**		
Automobiles		288
Medium Trucks (6 Tires)		16
Heavy Trucks (>6 Tires)		29
Average speed (mph)		
Third Sample: 5 minutes **Start Time: 1401**		
Automobiles	315	
Medium Trucks (6 Tires)	10	
Heavy Trucks (>6 Tires)	45	
Average speed (mph)		
1401-1403 35 mph		
1404-1405 45-50 mph		
Fourth Sample: 5 minutes **Start Time: 1407**		
Automobiles		262
Medium Trucks (6 Tires)		7
Heavy Trucks (>6 Tires)		33
Average speed (mph)		

62, 61, 60, 60, 68
57, 56, 72, 60, 55

Notes:

	START	TOT	RVs	p/up w/camper	MC	Bus	Dur.
NB	~~13:24~~	289		~~HH~~	11		5min
~~NB~~ SB	13:29	357		~~HH~~	1		5min

RVs
pickup/camper
HD pickup/car carrier
MC
Bus (cruise)
Bus (school)
pickup/trailer

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-5 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: DATE: 5/23/18

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	4:10	63.3						
2	11	65.3						
3	12	64.5					Truck in parking lot, car doors	
4	13	63.5						
5	14	63.7						
6	15	64.0						
7	16	63.1						
8	17	62.6						
9	18	63.0						
10	19	64.1						
11	20	64.1						
12	21	62.4					motorcycle, trailer bouncing I-95	
13	22	62.0						
14	23	64.7						
15	24	63.9						
16	25	63.7						
17	26	63.1						
18	27	62.6						
19	28	63.3						
20	29	61.6						
21	30	62.4					car pulled up + parked, talking, keys	
22	31	62.9						
23	32	61.7						
24	33	60.6						
25	34	63.4						
26	35	65.0					Laughing	in parking lot, car in lot
27	36	63.1					motorcycle	
28	37	61.2						
29	38	60.5						
30	39	60.2						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-5

ADDRESS: Noble Way Apartments, South by pond

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, Pedestrians (few)

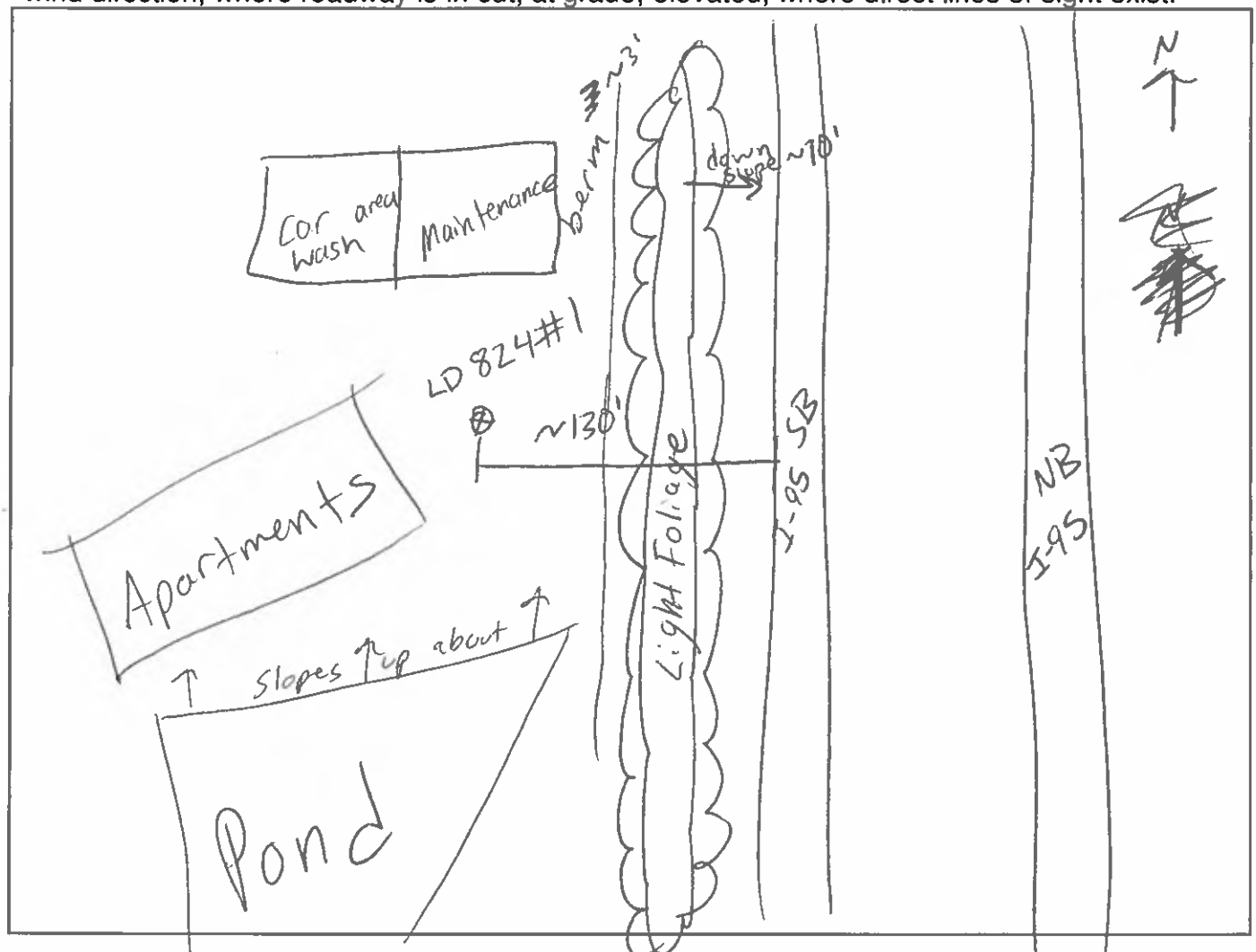
NOISE MONITOR: LD 824 # _____ S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 88°F WEATHER CONDITIONS: clear, breezy (4-5mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M5: Hamptons at Noble
(south end by pond; looking south)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-5 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 23 MAY 2018
_____ PERSONNEL: CJB/HTS

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: 1610

	DIR 1	DIR 2
Automobiles	322	
Medium Trucks (6 Tires)	5	
Heavy Trucks (>6 Tires)	28	
Average speed (mph)	—	

Second Sample: 5 **minutes**
Start Time: 1617

	DIR 1	DIR 2
Automobiles		339
Medium Trucks (6 Tires)		12
Heavy Trucks (>6 Tires)		23
Average speed (mph)		—

Third Sample: 5 **minutes**
Start Time: 1625

	DIR 1	DIR 2
Automobiles	374	
Medium Trucks (6 Tires)	13	
Heavy Trucks (>6 Tires)	23	
Average speed (mph)	—	

Fourth Sample: 5 **minutes**
Start Time: 1632

	DIR 1	DIR 2
Automobiles		322
Medium Trucks (6 Tires)		11
Heavy Trucks (>6 Tires)		30
Average speed (mph)		—

SB Traffic LOS POOR THIS 5 MIN PERIOD

CONGESTED

74, 68, 71, 70, 70
68, 73, 70, 77, 74

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-6 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: Noble Way Apartments, Central site DATE: 5/23/18

#	Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	3:31	61.5						
2	32	64.5						
3	33	62.7						
4	34	62.8					car door, starting, pulling away	
5	35	62.5						
6	36	61.4						
7	37	64.1						
8	38	63.5					motorcycle	
9	39	63.2						
10	40	62.7						
11	41	63.8					Horn	
12	42	64.2						
13	43	63.9					Car Door	
14	44	62.8						
15	45	63.9						
16	46	64.8						
17	47	63.8						
18	48	64.4						
19	49	63.4						
20	50	64.0					A/C unit	
21	51	65.0						
22	52	63.8						
23	53	63.0					Truck in parking lot	
24	54	62.9						
25	55	67.5					Car in lot	
26	56	62.2					Car Horn, brief	
27	57	63.0						
28	58	63.8						
29	59	62.3					Car Horn	
30	4:00	63.0						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-6

ADDRESS: _____

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, Birds, light A/C unit noise

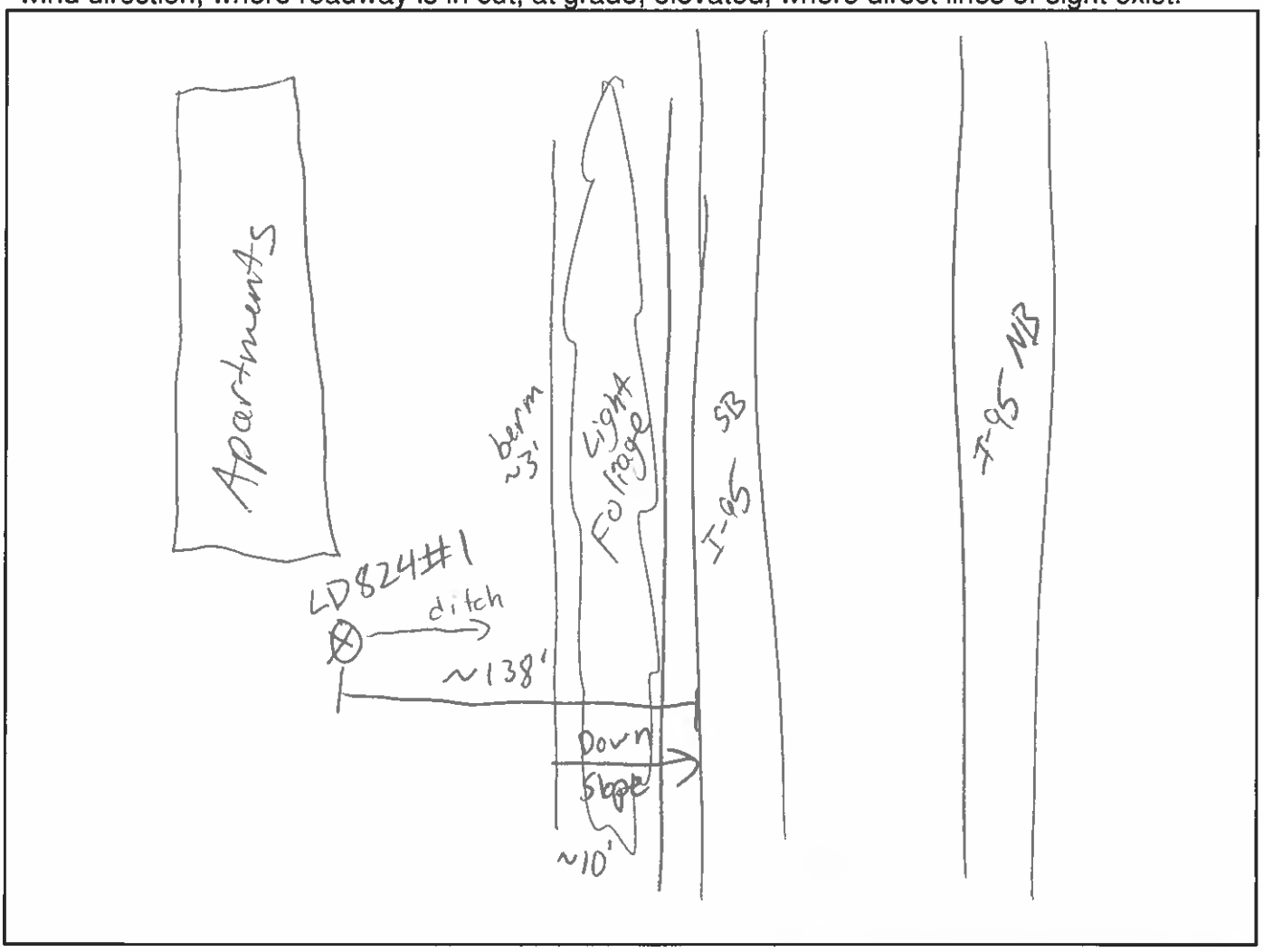
NOISE MONITOR: LD 824 # S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 89-90°F WEATHER CONDITIONS: clear, breezy (3-4mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M6: Hamptons at Noble
(central location looking north)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-6 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 23MAY2018
_____ PERSONNEL: CJB/HIJ

ROADWAY: I95

	DIRECTION 1: SB	DIRECTION 2: NB
First Sample: 5 minutes, **Start Time:** 1531		
Automobiles	432	
Medium Trucks (6 Tires)	11	
Heavy Trucks (>6 Tires)	33	
Average speed (mph)		
Second Sample: 5 minutes, **Start Time:** 1538		
Automobiles		297
Medium Trucks (6 Tires)		10
Heavy Trucks (>6 Tires)		30
Average speed (mph)		
Third Sample: 5 minutes, **Start Time:** 1544		
Automobiles	404	
Medium Trucks (6 Tires)	12	
Heavy Trucks (>6 Tires)	29	
Average speed (mph)		
Fourth Sample: 5 minutes, **Start Time:** 1550		
Automobiles		289
Medium Trucks (6 Tires)		11
Heavy Trucks (>6 Tires)		23
Average speed (mph)		

HARRIS MILLER MILLER & HANSON INC.

45, 45, 46, 45, 42
45, 42, 43, 46, 47

62, 57, 65, 69, 71
68, 68, 67, 66, 72

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-7 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: DATE: 5/23/18

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	2:54	66.5						
2	55	63.2						
3	56	63.9						
4	57	66.6						
5	58	64.3						
6	59	65.9						
7	[illegible]	67.8	✓				faint conversation (phone call on balcony	
8	01	67.1					A/C unit kicked on*	
9	02	66.2					Siren/~~Alarm~~, faint	
10	03	68.0						
11	04	66.7						
12	05	68.4						
13	06	67.1					A/C unit kicked off*	
14	07	66.4						
15	08	66.1						
16	09	66.1						
17	10	67.0						
18	11	66.0						
19	12	68.[illegible]1						
20	13	67.2						
21	14	66.9						
22	15	66.3						
23	16	67.1						
24	17	66.1					Birds	
25	18	68.2						
26	19	67.7					Motorcycle, A/C unit	
27	20	67.3					A/C unit	
28	21	65.9						
29	22	67.0						
30	23	65.0						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-7

ADDRESS: Apartments on Noble Way, next to Pool Area

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, distant construction,

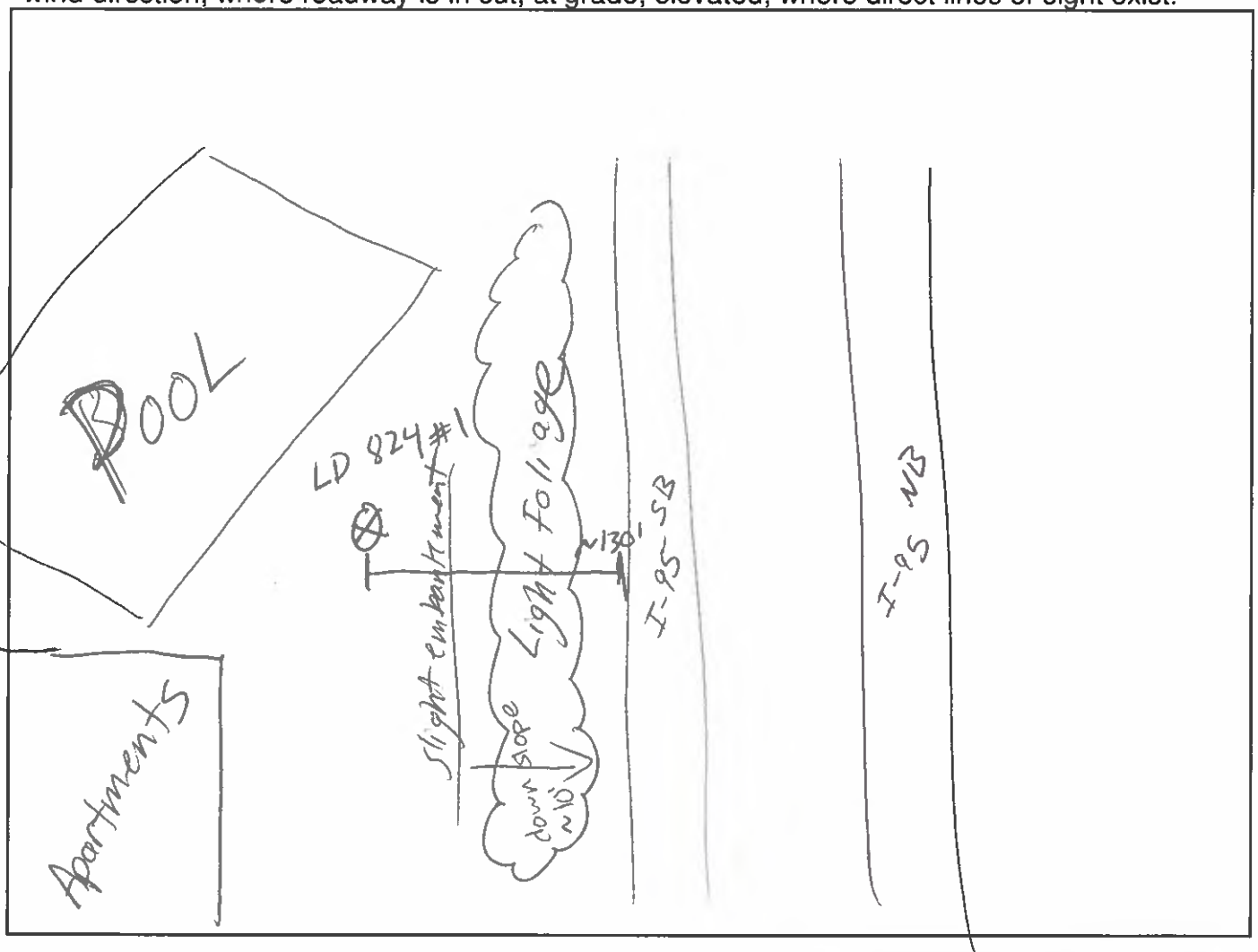
NOISE MONITOR: LD 824 # 1 S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 88-89°F WEATHER CONDITIONS: clear, ~~windy~~ (1-2mph) gusts up to (8-9mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M7: Hamptons at Noble
(north end by pool looking south)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-7 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 23MAY2018
_____ PERSONNEL: CJB/HTJ

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: 1454

	DIR 1	DIR 2
Automobiles	378	
Medium Trucks (6 Tires)	11	
Heavy Trucks (>6 Tires)	38	
Average speed (mph)		
Bus/MC	—	

Second Sample: 5 **minutes**
Start Time: 1504

	DIR 1	DIR 2
Automobiles		317
Medium Trucks (6 Tires)		11
Heavy Trucks (>6 Tires)		33
Average speed (mph)		
Bus/MC		7/0

Third Sample: 5 **minutes**
Start Time: 1511

	DIR 1	DIR 2
Automobiles	378	
Medium Trucks (6 Tires)	6	
Heavy Trucks (>6 Tires)	29	
Average speed (mph)		
Bus/MC	1/5	

0

Fourth Sample: 5 **minutes**
Start Time: 1518

	DIR 1	DIR 2
Automobiles		365
Medium Trucks (6 Tires)		20
Heavy Trucks (>6 Tires)		46
Average speed (mph)		
Bus/MC		—

0

0

HARRIS MILLER MILLER & HANSON INC.

51, 61, 57, 59, 65
59, 62, 58, 58, 64

72, 68, 68, 69, 67
65, 62, 69, 64, 62

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-8 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: 4100 Bragg Hill Dr, Kingdom Family Worship Cen. DATE: 5/24/18

Data File #10

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	10:18	65.5						cal check: 113.9
2	19	64.8					Airplane ~ 20 seconds	
3	20	65.5						
4	21	65.6						
5	22	64.4						
6	23	66.2						
7	24	65.7					Birds chirping Throughout	
8	25	65.6						
9	26	64.5						
10	27	65.4						
11	28	64.9						
12	29	64.7						
13	30	64.2						
14	31	63.2						
15	32	64.8						
16	33	65.3						
17	34	63.7						
18	35	64.5						
19	36	65.2						
20	37	64.9						
21	38	64.9						
22	39	64.3						
23	40	64.8						
24	41	65.6						
25	42	64.9						
26	43	64.5						
27	44	65.8						
28	45	64.3						
29	46	65.1						
30	47	64.9						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-8

ADDRESS: 400 Bragg Hill Drive, Kingdom Family Worship Center

OWNER: _____

DESCRIPTION: Playground Area near church (on property)

NOISE SOURCES: I-95 Traffic, Birds

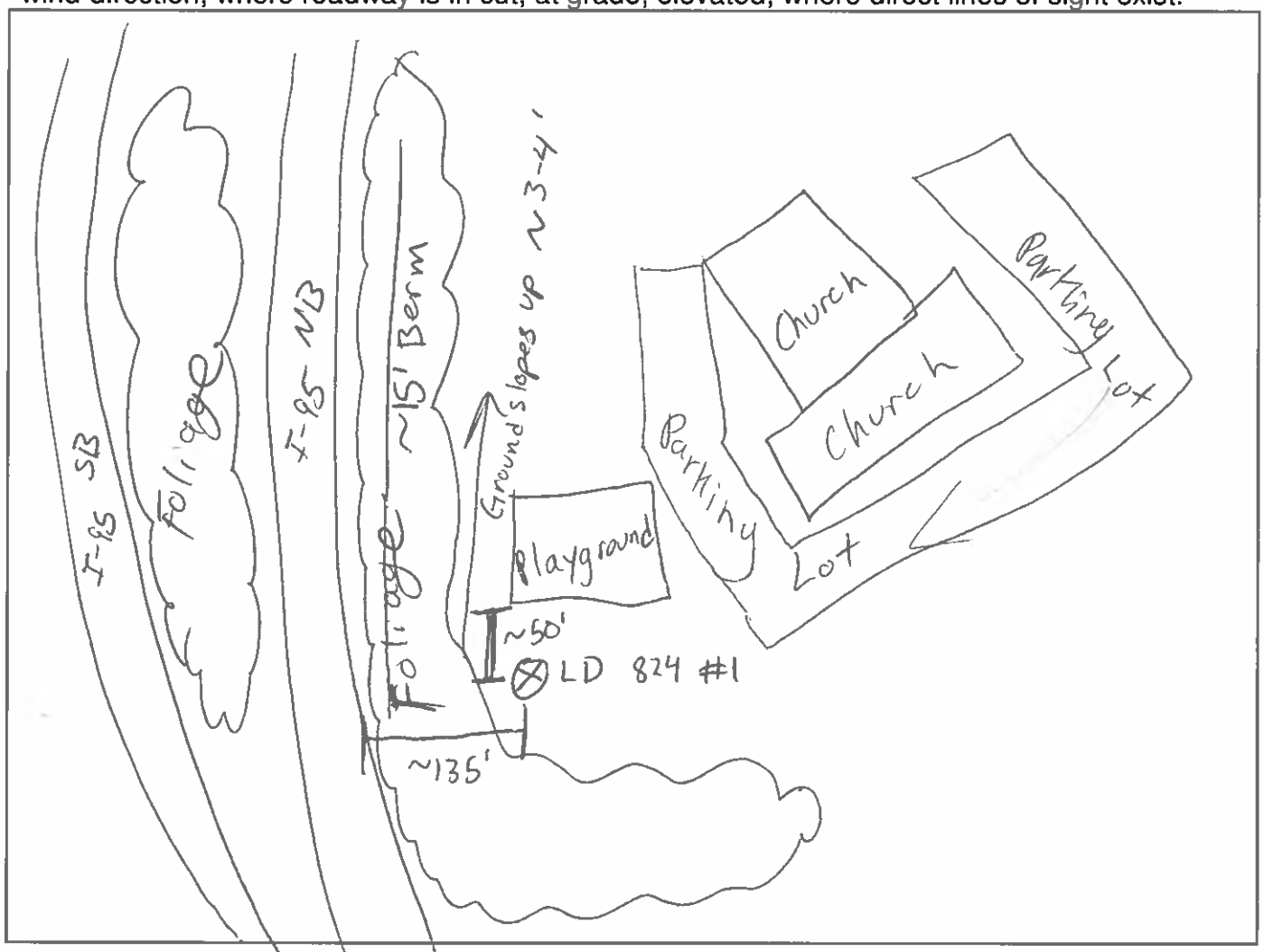
NOISE MONITOR: LD 824 # 1 S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 78-79°F WEATHER CONDITIONS: clear, breezy (1-3mph),

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M8: Kingdom Family Worship Center
(near playground looking northwest)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA:
MEASUREMENT SITE NO.: ST-8
ADDRESS/DESCRIPTION:

START TIME:
END TIME:
DATE: 24 MAY 2018
PERSONNEL: CJB/HTJ

ROADWAY: I95

	DIRECTION 1: SB	DIRECTION 2: NB
First Sample: 5 minutes **Start Time: 1018**		
Automobiles	294	
Medium Trucks (6 Tires)	09	
Heavy Trucks (>6 Tires)	33	
Average speed (mph)		
Second Sample: 5 minutes **Start Time: 1025**		
Automobiles		337
Medium Trucks (6 Tires)		14
Heavy Trucks (>6 Tires)		33
Average speed (mph)		
Third Sample: 5 minutes **Start Time: 1031**		
Automobiles	282	
Medium Trucks (6 Tires)	10	
Heavy Trucks (>6 Tires)	38	
Average speed (mph)		
Fourth Sample: 5 minutes **Start Time: 1040**		
Automobiles		345
Medium Trucks (6 Tires)		13
Heavy Trucks (>6 Tires)		42
Average speed (mph)		

DOWNSTREAM "ISSUE"?

SB SLOW BUT MOVING (DID NOT STOP)

34, 25, 28, 36, 36 | 73, 55, 64, 63, 62
38, 35, 41, 24, 42 | 72, 71, 72, 73, 71

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-9 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: 18 Riverside Pkwy DATE: 5/23/18

#	30 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	12:22	62.0						Check cal: 113.9
2	23	60.9					Birds throughout	
3	24	60.6						
4	25	62.9						
5	26	63.1						
6	27	63.6						
7	28	63.5	X				Prop Airplane	(~30 seconds)
8	29	62.4						
9	30	62.0						
10	31	60.1						
11	32	61.6						
12	33	60.9						
13	34	61.1						
14	35	61.9					Car leaving driveway	
15	36	61.4					*Conversation distant	
16	37	60.9						
17	38	61.1						
18	39	63.0						
19	40	61.6					occassional	bugs
20	41	61.0						
21	42	61.7						
22	43	61.6						
23	44	61.3						
24	45	60.5						
25	46	61.6						
26	47	61.9						
27	48	60.9						
28	49	61.2						
29	50	61.3						
30	51	61.7					motorcycle	

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-9

ADDRESS: 188 Riverside Pkwy

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, Birds

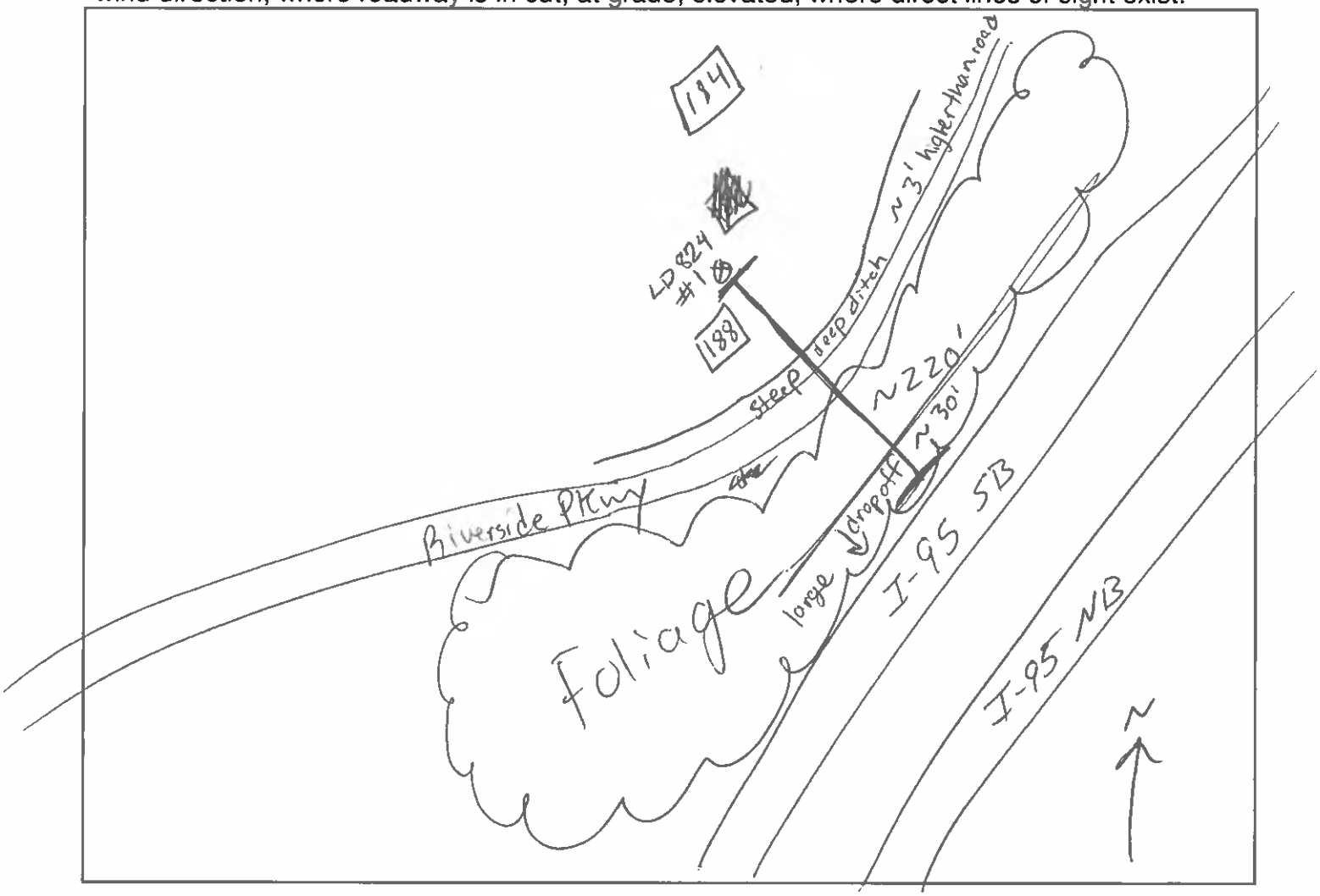
NOISE MONITOR: LD 824 # _____ S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 83°F WEATHER CONDITIONS: Clear, breezy (1-5 mph)

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M9: 188 Riverside Parkway
(looking east)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA:
MEASUREMENT SITE NO.: ST-9
ADDRESS/DESCRIPTION:

START TIME:
END TIME:
DATE: 23 MAY 2018
PERSONNEL: CJB, HTJ

ROADWAY: I95

	DIRECTION 1: SB	DIRECTION 2: NB
First Sample: 5 minutes **Start Time: 1222**		
MPH	74,69,67,68,61 55,64,58,67,70	63,76,63,59,61 59,67,66,64,65
Automobiles	308	
Medium Trucks (6 Tires)	13	
Heavy Trucks (>6 Tires)	47	
Average speed (mph)		
Bus/MC	2/1	
Second Sample: 5 minutes **Start Time: 1229**		
Automobiles		308
Medium Trucks (6 Tires)		13
Heavy Trucks (>6 Tires)		44
Average speed (mph)		
Bus/MC		—
Third Sample: 5 minutes **Start Time: 1236**		
Automobiles	319	
Medium Trucks (6 Tires)	11	
Heavy Trucks (>6 Tires)	47	
Average speed (mph)		
Bus/MC	0/1	
Fourth Sample: 5 minutes **Start Time: 1246**		
Automobiles		282
Medium Trucks (6 Tires)		7
Heavy Trucks (>6 Tires)		42
Average speed (mph)		
Bus/MC		2/0

HARRIS MILLER MILLER & HANSON INC.

IE ENTER=EXIT

SB INCLUDES VEHICLES FROM REST AREA / VISITOR CTR (NET FLOW = 0)

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-10 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: Musselman Road (culdesac (next to 100) DATE: 5/23/18

#	20 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	11:28	70.8						check cal - 113.9
2	29	72.4						
3	30	71.6						
4	31	71.2						
5	32	70.7						
6	33	70.1						
7	34	70.1						
8	35	71.5						
9	36	71.6						
10	37	71.2						
11	38	72.2						
12	39	70.1					Mail truck in culdesac	
13	40	70.9						
14	41	70.7	X				Truck in culdesac (turned around)	
15	42	71.0						
16	43	69.9						
17	44	70.5					Gusts, motorcycle SB	
18	45	70.1						
19	46	71.3					Birds	
20	47	71.8					Motorcycle SB	
21	48	70.1						
22	49	71.6						
23	50	72.5					Motorcycle NB	
24	51	70.3						
25	52	69.4						
26	53	72.3						
27	54	70.3						
28	55	71.6						
29	56	72.3					Truck in culdesac	
30	57	72.5						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-10

ADDRESS: Musselman Road Coldesac (next to 100 Musselman)

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, Birds

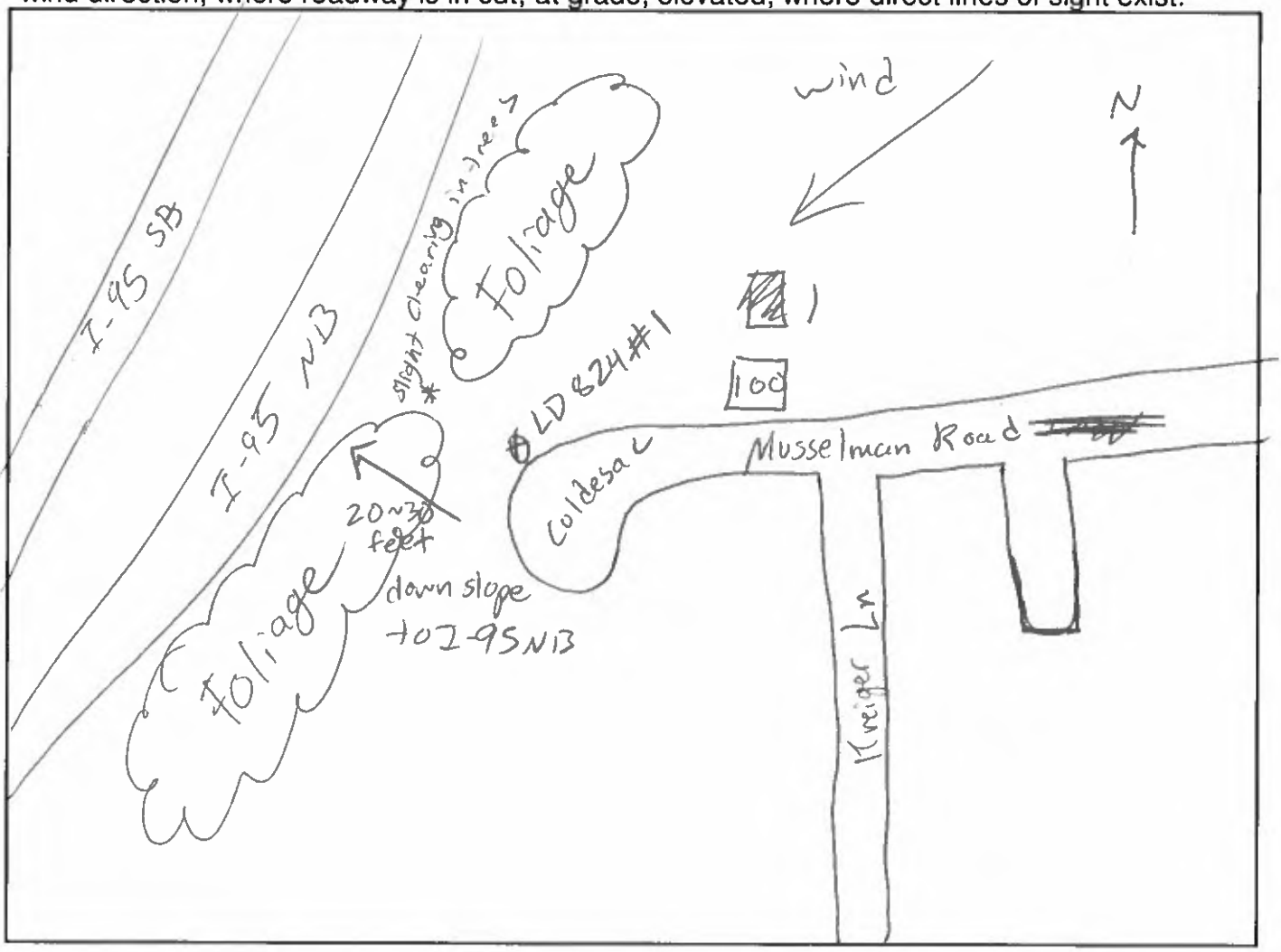
NOISE MONITOR: LD 824 # 1 S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 82-83 °F WEATHER CONDITIONS: Clear, breezy (1-5mph) w/ 10mph gu

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M10: cul-de-sac on Musselman Road
(looking east toward community)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-10 END TIME: _____
ADDRESS/DESCRIPTION: _____ DATE: 23MAY2018
_____ PERSONNEL: CJB/HTJ

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: ~~1128~~ 1128

	Direction 1: SB	Direction 2: NB
Automobiles	309	
Medium Trucks (6 Tires)	19	
Heavy Trucks (>6 Tires)	43	
Average speed (mph)	1/2	
BUS/MC		

Second Sample: 5 **minutes**
Start Time: 1134

	Direction 1: SB	Direction 2: NB
Automobiles		322
Medium Trucks (6 Tires)		15
Heavy Trucks (>6 Tires)		50
Average speed (mph)		3/1
BUS/MC		

Third Sample: 5 **minutes**
Start Time: ~~1140~~ 1148

	Direction 1: SB	Direction 2: NB
Automobiles	357	
Medium Trucks (6 Tires)	13	
Heavy Trucks (>6 Tires)	45	
Average speed (mph)	0/0	
BUS/MC		

Fourth Sample: 5 **minutes**
Start Time: ~~1153~~ 1153

	Direction 1: SB	Direction 2: NB
Automobiles		324
Medium Trucks (6 Tires)		9
Heavy Trucks (>6 Tires)		37
Average speed (mph)		4/1
BUS/MC		

63, 65, 63, 67, 57
68 66, 51, 71, 72

62, 75, 74, 71, 68
73, 65, 67, 63, 74

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-11 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: 48 Old Falls Road DATE: 5/23/18

#	Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	8:43	63.3					Birds* Throughout msmt period	
2	44	64.1					Birds	
3	45	63.2						
4	46	63.9					~~Robins~~	
5	47	64.1						
6	48	65.2						
7	49	63.4						
8	50	63.4						
9	51	64.0						
10	52	64.6						
11	53	62.5						
12	54	64.2						
13	55	63.9						
14	56	65.3						
15	57	65.0						
16	58	63.8						
17	59	64.1						
18	9:00	63.4	✓			*	Lawn Truck	
19	01	64.3						
20	02	63.1						
21	03	64.6					Birds	
22	04	63.5						
23	05	64.0						
24	06	63.0						
25	07	63.1					Truck bed	bouncing
26	08	64.6						
27	09	64.9						
28	10	64.3						
29	11	65.5						
30	12	63.5						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-11

ADDRESS: 48 Old Falls Road

OWNER: _____

DESCRIPTION: _____

NOISE SOURCES: I-95 Traffic, Birds,

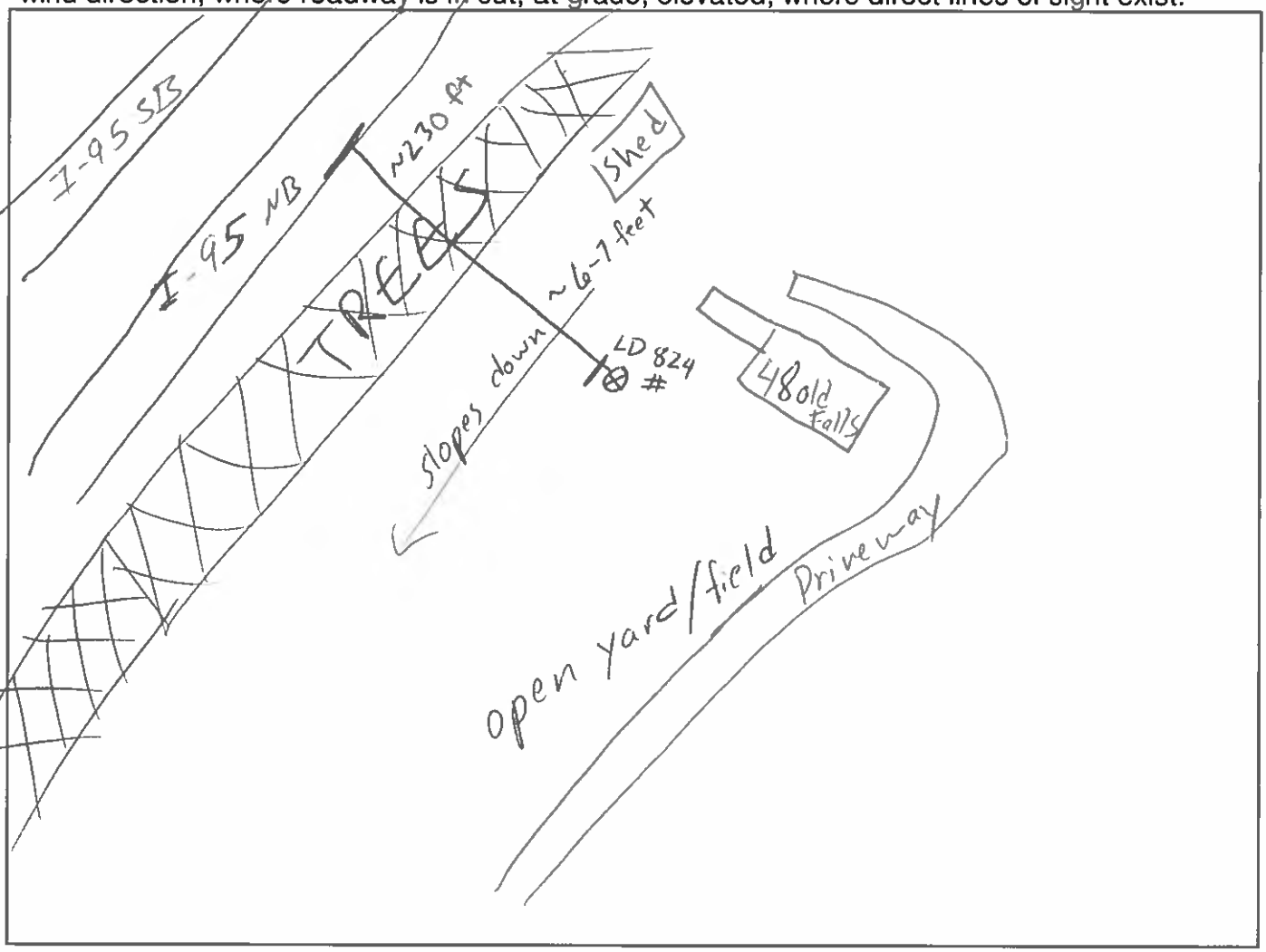
NOISE MONITOR: LD 824 # S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 75-76°F WEATHER CONDITIONS: Sunny, humid, warm 98%, 1-2 mph winds

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M11: 48 Old Falls Road
(side yard of residence looking east toward house)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-11 END TIME: _____
ADDRESS/DESCRIPTION: OLD FALLS RD DATE: 23 MAY 2018
_____ PERSONNEL: CJB/HTJ

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: 845

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	282	
Medium Trucks (6 Tires)	6	
Heavy Trucks (>6 Tires)	26	
Average speed (mph)	65-70	
	MC	2

Second Sample: 5 **minutes**
Start Time: 852

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	8	301
Medium Trucks (6 Tires)	15	15
Heavy Trucks (>6 Tires)	41	41
Average speed (mph)		65-70
	MC	1

Third Sample: 5 **minutes**
Start Time: 900

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles	212	
Medium Trucks (6 Tires)	13	
Heavy Trucks (>6 Tires)	23	
Average speed (mph)	65-70	
MC	0	

Fourth Sample: 5 **minutes**
Start Time: 906

	DIRECTION 1: SB	DIRECTION 2: NB
Automobiles		308
Medium Trucks (6 Tires)		13
Heavy Trucks (>6 Tires)		35
Average speed (mph)		65-70
MC		0

SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

MEASUREMENT SITE NO.: ST-12 PERSONNEL:HTJ/CJB

ADDRESS/DESCRIPTION: Stafford Nursery, 544 Truslow Road DATE: 5/23/18

#	__ Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	10:00	71.5						
2	01	72.7						
3	02	73.4						
4	03	72.6						
5	04	72.9						
6	05	72.5					Loud Truck	
7	06	72.8						
8	07	70.9						
9	08	72.3						
10	09	72.1	✓				Distant air compressor	
11	10	72.4						
12	11	71.9						
13	12	71.7						
14	13	71.5					Motorcycle	
15	14	72.5						
16	15	72.2						
17	16	72.6	✓				Truck breaks hiss	
18	17	73.0						
19	18	70.5						
20	19	73.0						
21	20	72.3	✓				Distant crashing sound	
22	21	72.4						
23	22	70.8	?				11mph wind gusts	
24	23	72.5						
25	24	73.3					Very loud truck	
26	25	71.2						
27	26	74.2						
28	27	72.8						
29	28	71.9						
30	29	71.5						

TOTAL Leq = SUBSET Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

>> ADD SKETCH AND WEATHER CONDITIONS TO REVERSE OR OTHER SHEET <<

PROJECT: I-95 Rappahannock River Crossing

JOB NO.: 309720

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: ST-12

ADDRESS: 544 Truslow Rd

OWNER: _____

DESCRIPTION: Garden Nursery

NOISE SOURCES: I-95 Traffic, Birds

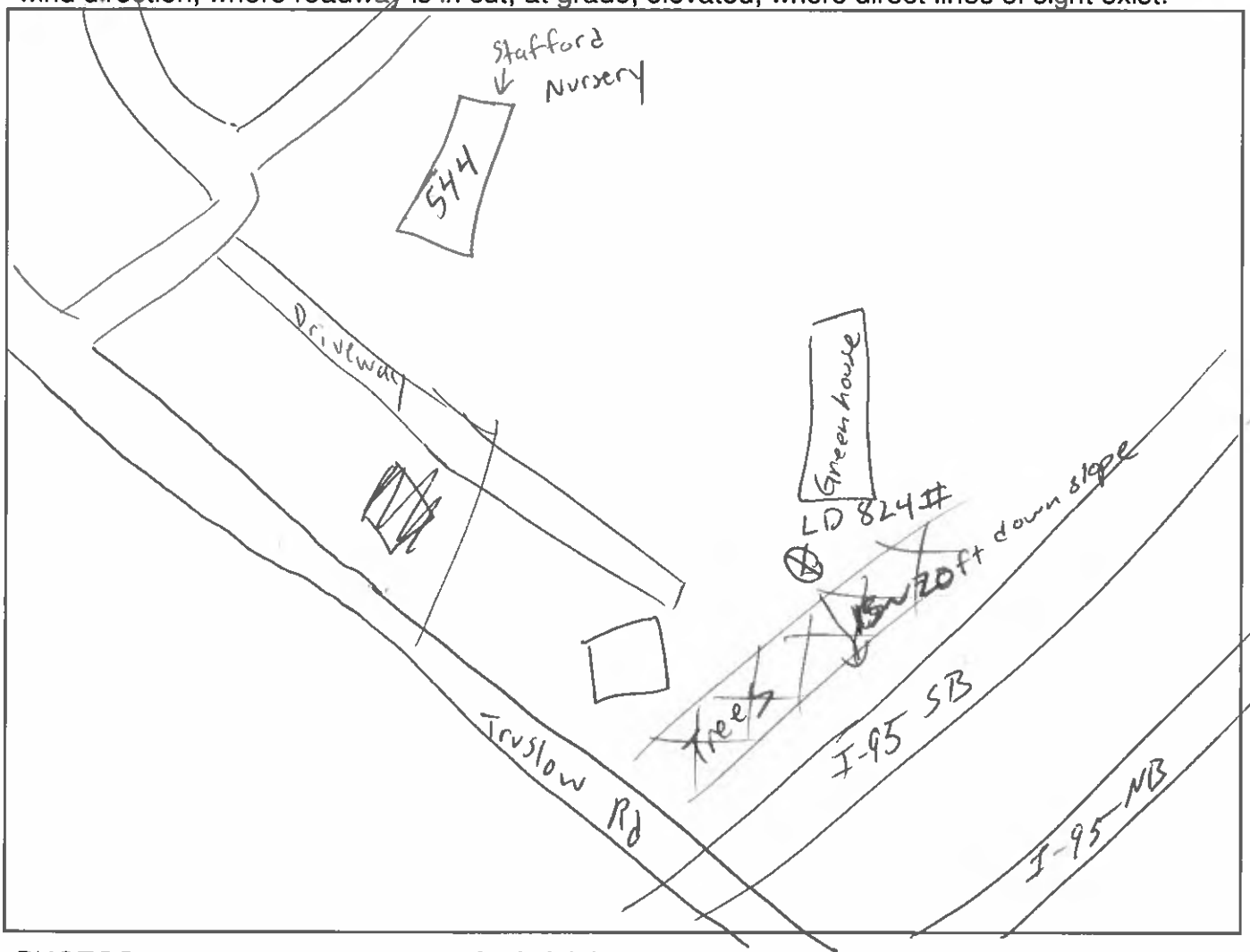
NOISE MONITOR: LD 824 # S/N: _____

MICROPHONE: _____ S/N: _____

CALIBRATOR: _____ S/N: _____

TEMP. RANGE (°F): 90 WEATHER CONDITIONS: Clear, humid, breezy 4-5 mph winds

SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____

Site M12: 544 Truslow Road
(Stafford Nursery looking east)

PROJECT: I-95 Rappahannock River Crossing
JOB NO.: 309720

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: _____
MEASUREMENT SITE NO.: ST-12 END TIME: _____
ADDRESS/DESCRIPTION: 544 TRUSLOW DATE: 23 MAY 2018
_____ PERSONNEL: CJB/HTJ

ROADWAY: I95 **DIRECTION 1:** SB **DIRECTION 2:** NB

First Sample: 5 **minutes**
Start Time: ~~955~~ 1004

	Direction 1: SB	Direction 2: NB
Automobiles	270	
Medium Trucks (6 Tires)	12	
Heavy Trucks (>6 Tires)	33	
Average speed (mph)	2/1	

Bus/MC

Second Sample: 5 **minutes**
Start Time: 1010

	Direction 1: SB	Direction 2: NB
Automobiles		265
Medium Trucks (6 Tires)		12
Heavy Trucks (>6 Tires)		38
Average speed (mph)		2/2

Bus/MC

Third Sample: 5 **minutes**
Start Time: 1017

	Direction 1: SB	Direction 2: NB
Automobiles	257	
Medium Trucks (6 Tires)	17	
Heavy Trucks (>6 Tires)	38	
Average speed (mph)	2/4	

Bus/MC

Fourth Sample: 5 **minutes**
Start Time: _____

	Direction 1: SB	Direction 2: NB
Automobiles		294
Medium Trucks (6 Tires)		3
Heavy Trucks (>6 Tires)		37
Average speed (mph)		2/1

Bus/MC

HARRIS MILLER MILLER & HANSON INC.

53, 68, 64, 58, 61
73, 60, 60, 62, 41

67, 72, 65, 60, 69
61, 66, 69, 68, 65

Site Number	M1
Location:	cul-de-sac at end of Queensbury Court
Date:	5/24/2018
Start Time:	12:35
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
12:35	58.9	58.9	
12:36	59.2	59.2	
12:37	58.4	x	60
12:38	59.5	x	60
12:39	58.9	x	60
12:40	59.2	x	60
12:41	60.1	60.1	
12:42	58.0	58.0	
12:43	58.1	x	60
12:44	59.1	59.1	
12:45	58.5	58.5	
12:46	58.5	58.5	
12:47	59.4	59.4	
12:48	57.8	57.8	
12:49	59.6	59.6	
12:50	58.4	58.4	
13:02	57.2	57.2	
13:10	57.8	57.8	
13:11	57.9	57.9	
13:12	59.3	59.3	
13:13	60.2	60.2	
13:14	58.7	58.7	
13:15	57.7	57.7	
13:16	58.0	58.0	
13:17	57.6	57.6	
13:18	58.6	58.6	
13:19	58.4	58.4	
13:20	58.0	58.0	
13:21	58.0	58.0	
13:22	58.6	58.6	
30 Minute Leq	**58.7**	**58.6**	**300**
		Percentage Excluded	**16.7%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	338	59
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	11	59
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	49	59
I-95	NB	A	I-95_NB	I-95_NB_A		5	240	59
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	15	59
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	26	59
I-95	SB	A	I-95_SB	I-95_SB_A		5	295	59
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	16	59
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	36	59
I-95	NB	A	I-95_NB	I-95_NB_A		5	279	59
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	11	59
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	21	59
	NB-SB	A	_NB-SB	_NB-SB_A				
	NB-SB	MT	_NB-SB	_NB-SB_MT				
	NB-SB	HT	_NB-SB	_NB-SB_HT				

	SB	NB
		58
		64
		69
		50
		67
		57
		59
		53
		58
		53
Max	0	69
Average	**59**	59
Median	#NUM!	58
Min	0	50

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	633	59	3798	59	4470	85%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	27	59	162	59	4470	4%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	85	59	510	59	4470	11%
I-95	NB	A	I-95_NB	I-95_NB_A	10	519	59	3114	59	3552	88%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	26	59	156	59	3552	4%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	47	59	282	59	3552	8%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	NB-SB	A	0_NB-SB	0_NB-SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	NB-SB	MT	0_NB-SB	0_NB-SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	NB-SB	HT	0_NB-SB	0_NB-SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M2
Location:	11804 Berwick Court
Date:	5/24/2018
Start Time:	11:54
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
11:54	66.2	66.2	
11:55	64.9	64.9	
11:56	65.1	65.1	
11:57	64.3	64.3	
11:58	64.3	64.3	
11:59	65.1	65.1	
12:00	63.4	63.4	
12:01	64.3	64.3	
12:02	65.2	65.2	
12:03	63.9	63.9	
12:04	64.8	64.8	
12:05	64.7	64.7	
12:06	64.4	64.4	
12:07	65.3	65.3	
12:08	64.6	64.6	
12:09	63.7	63.7	
12:10	64.7	64.7	
12:11	63.7	63.7	
12:12	64.8	64.8	
12:13	64.3	64.3	
12:14	63.7	63.7	
12:15	64.9	64.9	
12:16	64.6	64.6	
12:17	64.7	64.7	
12:18	64.1	64.1	
12:19	62.9	62.9	
12:20	64.6	64.6	
12:21	65.0	65.0	
12:22	63.9	63.9	
12:23	64.9	64.9	
30 Minute Leq	**64.5**	**64.5**	**0**
		Percentage Excluded	**0.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	288	64
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	11	64
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	48	64
I-95	NB	A	I-95_NB	I-95_NB_A		5	240	64
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	9	64
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	35	64
I-95	SB	A	I-95_SB	I-95_SB_A		5	331	64
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	8	64
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	56	64
I-95	NB	A	I-95_NB	I-95_NB_A		5	249	64
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	10	64
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	32	64
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph	mph
	SB samples	NB samples
		60
		62
		64
		57
		63
		71
		68
		70
		72
		56
Max	0	72
Average	#DIV/0!	64
Median	#NUM!	64
Min	0	56

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	619	64	3714	64	4452	83%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	19	64	114	64	4452	3%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	104	64	624	64	4452	14%
I-95	NB	A	I-95_NB	I-95_NB_A	10	489	64	2934	64	3450	85%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	19	64	114	64	3450	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	67	64	402	64	3450	12%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M3
Location:	11925 Burgess Lane (New Life Church)
Date:	5/24/2018
Start Time:	9:16
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
9:16	67.8	67.8	
9:17	67.9	67.9	
9:18	68.1	68.1	
9:19	67.2	67.2	
9:20	67.6	67.6	
9:21	67.6	67.6	
9:22	67.8	67.8	
9:23	68.1	68.1	
9:24	67.1	67.1	
9:25	67.3	67.3	
9:26	68.0	68.0	
9:27	69.9	69.9	
9:28	67.1	67.1	
9:29	67.0	67.0	
9:30	67.4	67.4	
9:31	67.2	67.2	
9:32	67.8	67.8	
9:33	68.3	68.3	
9:34	67.1	67.1	
9:35	68.1	68.1	
9:36	69.2	69.2	
9:37	67.7	67.7	
9:38	66.9	66.9	
9:39	66.8	66.8	
9:40	68.8	68.8	
9:41	66.6	66.6	
9:42	67.6	67.6	
9:43	67.3	67.3	
9:44	67.0	67.0	
9:45	66.7	66.7	
30 Minute Leq	**67.7**	**67.7**	**0**
		Percentage Excluded	**0.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	NB	A	I-95_NB	I-95_NB_A		5	255	60
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	10	60
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	46	60
I-95	SB	A	I-95_SB	I-95_SB_A		5	243	60
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	17	60
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	27	60
I-95	NB	A	I-95_NB	I-95_NB_A		5	309	60
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	11	60
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	42	60
I-95	SB	A	I-95_SB	I-95_SB_A		5	258	60
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	9	60
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	35	60
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB samples	mph NB samples
		58
		54
		64
		67
		57
		58
		57
		59
		58
		66
Max	0	67
Average	#DIV/0!	60
Median	#NUM!	58
Min	0	54

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	NB	A	I-95_NB	I-95_NB_A	10	564	60	3384	60	4038	84%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	21	60	126	60	4038	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	88	60	528	60	4038	13%
I-95	SB	A	I-95_SB	I-95_SB_A	10	501	60	3006	60	3534	85%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	26	60	156	60	3534	4%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	62	60	372	60	3534	11%
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M4
Location:	cul-de-sac at north end of Pickett Street
Date:	5/24/2018
Start Time:	13:48
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
13:48	61.5	61.5	
13:49	61.0	61.0	
13:50	60.4	60.4	
13:51	61.4	61.4	
13:52	60.8	60.8	
13:53	64.1	64.1	
13:54	61.8	61.8	
13:55	61.4	61.4	
13:56	62.0	62.0	
13:57	60.8	60.8	
13:58	61.2	61.2	
13:59	60.3	60.3	
14:00	60.8	60.8	
14:01	61.6	61.6	
14:02	60.4	60.4	
14:03	62.0	62.0	
14:04	61.8	61.8	
14:05	63.8	63.8	
14:06	61.5	61.5	
14:07	60.8	60.8	
14:08	61.0	61.0	
14:09	60.5	60.5	
14:10	59.6	59.6	
14:11	61.4	61.4	
14:12	62.9	62.9	
14:13	62.7	62.7	
14:14	62.4	62.4	
14:15	62.3	62.3	
14:16	62.4	62.4	
14:17	60.9	60.9	
30 Minute Leq	**61.6**	**61.6**	**0**
		Percentage Excluded	**0.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	354	61
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	6	61
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	40	61
I-95	NB	A	I-95_NB	I-95_NB_A		5	288	61
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	16	61
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	29	61
I-95	SB	A	I-95_SB	I-95_SB_A		5	315	61
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	10	61
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	45	61
I-95	NB	A	I-95_NB	I-95_NB_A		5	262	61
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	7	61
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	33	61
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB samples	mph NB samples
		62
		61
		60
		60
		68
		57
		56
		72
		60
		55
Max	0	72
Average	#DIV/0!	61
Median	#NUM!	60
Min	0	55

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	669	61	4014	61	4620	87%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	16	61	96	61	4620	2%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	85	61	510	61	4620	11%
I-95	NB	A	I-95_NB	I-95_NB_A	10	550	61	3300	61	3810	87%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	23	61	138	61	3810	4%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	62	61	372	61	3810	10%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M5
Location:	Noble Way Apartments (south by pond)
Date:	5/23/2018
Start Time:	16:10
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
16:10	63.3	63.3	
16:11	65.3	65.3	
16:12	64.4	64.4	
16:13	63.5	63.5	
16:14	63.6	63.6	
16:15	64.0	64.0	
16:16	63.1	63.1	
16:17	62.6	62.6	
16:18	63.1	63.1	
16:19	64.1	64.1	
16:20	64.1	64.1	
16:21	62.3	62.3	
16:22	62.0	62.0	
16:23	64.7	64.7	
16:24	63.9	63.9	
16:25	63.7	63.7	
16:26	63.1	63.1	
16:27	62.6	62.6	
16:28	63.3	63.3	
16:29	61.5	61.5	
16:30	62.4	62.4	
16:31	62.8	62.8	
16:32	61.7	61.7	
16:33	60.7	60.7	
16:34	63.4	63.4	
16:35	65.0	65.0	
16:36	63.1	63.1	
16:37	61.2	61.2	
16:38	60.5	60.5	
16:39	60.2	60.2	
30 Minute Leq	**63.2**	**63.2**	**0**
		Percentage Excluded	**0.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	322	72
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	5	72
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	28	72
I-95	NB	A	I-95_NB	I-95_NB_A		5	339	72
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	12	72
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	23	72
I-95	SB	A	I-95_SB	I-95_SB_A		5	374	72
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	13	72
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	23	72
I-95	NB	A	I-95_NB	I-95_NB_A		5	322	72
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	11	72
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	30	72
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB samples	mph NB samples
		74
		68
		71
		70
		70
		68
		73
		70
		77
		74
Max	0	77
Average	#DIV/0!	72
Median	#NUM!	71
Min	0	68

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	696	72	4176	72	4590	91%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	18	72	108	72	4590	2%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	51	72	306	72	4590	7%
I-95	NB	A	I-95_NB	I-95_NB_A	10	661	72	3966	72	4422	90%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	23	72	138	72	4422	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	53	72	318	72	4422	7%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M6
Location:	Noble Way Apartments (central)
Date:	5/23/2018
Start Time:	15:31
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
15:31	61.6	61.6	
15:32	64.5	64.5	
15:33	62.7	62.7	
15:34	62.8	62.8	
15:35	62.5	62.5	
15:36	61.4	61.4	
15:37	64.1	64.1	
15:38	63.5	63.5	
15:39	63.2	63.2	
15:40	62.7	62.7	
15:41	63.5	63.5	
15:42	64.1	64.1	
15:43	63.8	63.8	
15:44	62.7	62.7	
15:45	63.9	63.9	
15:46	64.8	64.8	
15:47	63.8	63.8	
15:48	64.3	64.3	
15:49	63.4	63.4	
15:50	64.1	64.1	
15:51	65.0	65.0	
15:52	63.7	63.7	
15:53	63.0	63.0	
15:54	62.9	62.9	
15:55	62.5	62.5	
15:56	62.1	62.1	
15:57	63.0	63.0	
15:58	63.8	63.8	
15:59	62.3	62.3	
16:00	63.0	63.0	
30 Minute Leq	**63.4**	**63.4**	**0**
		Percentage Excluded	**0.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	432	45
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	11	45
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	33	45
I-95	NB	A	I-95_NB	I-95_NB_A		5	297	67
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	10	67
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	30	67
I-95	SB	A	I-95_SB	I-95_SB_A		5	404	45
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	12	45
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	29	45
I-95	NB	A	I-95_NB	I-95_NB_A		5	289	67
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	11	67
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	23	67
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
	45	62
	45	57
	46	65
	45	69
	42	71
	45	68
	42	68
	43	67
	46	66
	47	72
Max	47	72
Average	45	67
Median	45	68
Min	42	57

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	836	45	5016	45	5526	91%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	23	45	138	45	5526	2%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	62	45	372	45	5526	7%
I-95	NB	A	I-95_NB	I-95_NB_A	10	586	67	3516	67	3960	89%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	21	67	126	67	3960	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	53	67	318	67	3960	8%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M7
Location:	Noble Way Apartments (north by pool)
Date:	5/23/2018
Start Time:	14:54
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
14:54	66.5	66.5	
14:55	63.2	63.2	
14:56	63.9	63.9	
14:57	66.6	66.6	
14:58	66.3	66.3	
14:59	65.9	65.9	
15:00	67.8	x	60
15:01	67.1	67.1	
15:02	66.3	66.3	
15:03	68.0	68.0	
15:04	66.7	66.7	
15:05	68.9	68.9	
15:06	67.1	67.1	
15:07	66.4	66.4	
15:08	66.1	66.1	
15:09	66.1	66.1	
15:10	67.0	67.0	
15:11	66.0	66.0	
15:12	68.1	68.1	
15:13	67.2	67.2	
15:14	66.9	66.9	
15:15	66.3	66.3	
15:16	67.1	67.1	
15:17	66.1	66.1	
15:18	68.2	68.2	
15:19	67.7	67.7	
15:20	67.3	67.3	
15:21	65.9	65.9	
15:22	67.1	67.1	
15:23	65.0	65.0	
30 Minute Leq	**66.8**	**66.7**	**60**
		Percentage Excluded	**3.3%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	378	59
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	11	59
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	38	59
I-95	NB	A	I-95_NB	I-95_NB_A		5	317	67
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	11	67
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	33	67
I-95	SB	A	I-95_SB	I-95_SB_A		5	378	59
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	6	59
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	29	59
I-95	NB	A	I-95_NB	I-95_NB_A		5	365	67
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	20	67
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	46	67
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
	51	72
	61	68
	57	68
	59	69
	65	67
	59	65
	62	62
	58	69
	58	64
	64	63
Max	65	72
Average	59	67
Median	59	68
Min	51	62

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	756	59	4536	59	5040	90%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	17	59	102	59	5040	2%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	67	59	402	59	5040	8%
I-95	NB	A	I-95_NB	I-95_NB_A	10	682	67	4092	67	4752	86%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	31	67	186	67	4752	4%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	79	67	474	67	4752	10%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M8
Location:	400 Bragg Hill Drive (Kingdom Family Worship C
Date:	5/24/2018
Start Time:	10:18
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
10:18	65.5	65.5	
10:19	64.8	64.8	
10:20	65.5	65.5	
10:21	65.6	65.6	
10:22	64.3	64.3	
10:23	66.2	66.2	
10:24	65.7	65.7	
10:25	65.6	65.6	
10:26	64.5	64.5	
10:27	65.4	65.4	
10:28	65.0	65.0	
10:29	64.7	64.7	
10:30	64.2	64.2	
10:31	63.3	63.3	
10:32	64.8	64.8	
10:33	65.3	65.3	
10:34	63.8	63.8	
10:35	64.3	64.3	
10:36	65.3	65.3	
10:37	64.9	64.9	
10:38	64.8	64.8	
10:39	64.2	64.2	
10:40	64.9	64.9	
10:41	65.6	65.6	
10:42	64.8	64.8	
10:43	64.4	64.4	
10:44	65.8	65.8	
10:45	64.2	64.2	
10:46	65.1	65.1	
10:47	64.9	64.9	
30 Minute Leq	**65.0**	**65.0**	**0**
		Percentage Excluded	**0.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	294	34
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	9	34
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	33	34
I-95	NB	A	I-95_NB	I-95_NB_A		5	337	68
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	14	68
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	33	68
I-95	SB	A	I-95_SB	I-95_SB_A		5	282	34
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	10	34
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	38	34
I-95	NB	A	I-95_NB	I-95_NB_A		5	345	68
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	13	68
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	42	68
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
	34	73
	25	55
	28	64
	36	63
	36	62
	38	72
	35	71
	41	72
	24	73
	42	71
Max	42	73
Average	34	68
Median	36	71
Min	24	55

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	576	34	3456	34	3996	86%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	19	34	114	34	3996	3%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	71	34	426	34	3996	11%
I-95	NB	A	I-95_NB	I-95_NB_A	10	682	68	4092	68	4704	87%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	27	68	162	68	4704	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	75	68	450	68	4704	10%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M9
Location:	18 Riverside Parkway
Date:	5/23/2018
Start Time:	12:22
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
12:22	62.0	62.0	
12:23	60.8	60.8	
12:24	60.6	60.6	
12:25	63.0	63.0	
12:26	63.1	63.1	
12:27	63.6	63.6	
12:28	63.5	x	60
12:29	62.4	62.4	
12:30	62.0	62.0	
12:31	60.1	60.1	
12:32	61.6	61.6	
12:33	60.9	60.9	
12:34	61.1	61.1	
12:35	62.0	62.0	
12:36	61.4	61.4	
12:37	60.8	60.8	
12:38	61.1	61.1	
12:39	62.9	62.9	
12:40	61.6	61.6	
12:41	61.0	61.0	
12:42	61.6	61.6	
12:43	61.6	61.6	
12:44	61.4	61.4	
12:45	60.4	60.4	
12:46	61.7	61.7	
12:47	61.9	61.9	
12:48	60.8	60.8	
12:49	61.2	61.2	
12:50	61.3	61.3	
12:51	61.7	61.7	
30 Minute Leq	**61.7**	**61.7**	**60**
		Percentage Excluded	**3.3%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	308	65
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	13	65
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	47	65
I-95	NB	A	I-95_NB	I-95_NB_A		5	308	64
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	13	64
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	44	64
I-95	SB	A	I-95_SB	I-95_SB_A		5	319	65
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	11	65
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	47	65
I-95	NB	A	I-95_NB	I-95_NB_A		5	282	64
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	7	64
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	42	64
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
	74	63
	69	76
	67	63
	68	59
	61	61
	55	59
	64	67
	58	66
	67	64
	70	65
Max	74	76
Average	65	64
Median	67	64
Min	55	59

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	627	65	3762	65	4470	84%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	24	65	144	65	4470	3%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	94	65	564	65	4470	13%
I-95	NB	A	I-95_NB	I-95_NB_A	10	590	64	3540	64	4176	85%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	20	64	120	64	4176	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	86	64	516	64	4176	12%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M10
Location:	Musselman Road cul-de-sac
Date:	5/23/2018
Start Time:	11:28
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
11:28	70.8	70.8	
11:29	72.4	72.4	
11:30	71.6	71.6	
11:31	71.1	71.1	
11:32	70.7	70.7	
11:33	70.1	70.1	
11:34	70.1	70.1	
11:35	71.5	71.5	
11:36	71.6	71.6	
11:37	71.2	71.2	
11:38	72.2	72.2	
11:39	70.1	70.1	
11:40	70.9	70.9	
11:41	70.6	x	60
11:42	71.0	71.0	
11:43	69.9	69.9	
11:44	70.6	70.6	
11:45	70.0	70.0	
11:46	71.3	71.3	
11:47	71.8	71.8	
11:48	70.1	70.1	
11:49	71.6	71.6	
11:50	72.4	72.4	
11:51	70.3	70.3	
11:52	69.5	69.5	
11:53	72.2	72.2	
11:54	70.3	70.3	
11:55	71.6	71.6	
11:56	72.3	72.3	
11:57	72.6	72.6	
30 Minute Leq	**71.2**	**71.2**	**60**
		Percentage Excluded	**3.3%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	309	64
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	19	64
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	43	64
I-95	NB	A	I-95_NB	I-95_NB_A		5	322	69
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	15	69
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	50	69
I-95	SB	A	I-95_SB	I-95_SB_A		5	357	64
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	13	64
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	45	64
I-95	NB	A	I-95_NB	I-95_NB_A		5	324	69
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	9	69
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	37	69
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
	63	62
	65	75
	63	74
	67	71
	57	68
	68	73
	66	65
	51	67
	71	63
	72	74
Max	72	75
Average	64	69
Median	66	70
Min	51	62

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	666	64	3996	64	4716	85%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	32	64	192	64	4716	4%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	88	64	528	64	4716	11%
I-95	NB	A	I-95_NB	I-95_NB_A	10	646	69	3876	69	4542	85%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	24	69	144	69	4542	3%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	87	69	522	69	4542	11%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M11
Location:	48 Old Falls Road
Date:	5/23/2018
Start Time:	8:43
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
8:43	63.4	63.4	
8:44	63.9	63.9	
8:45	63.4	63.4	
8:46	63.7	63.7	
8:47	64.4	64.4	
8:48	64.9	64.9	
8:49	63.6	63.6	
8:50	63.4	63.4	
8:51	64.1	64.1	
8:52	64.3	64.3	
8:53	63.1	63.1	
8:54	63.9	63.9	
8:55	64.6	64.6	
8:56	64.8	64.8	
8:57	64.9	64.9	
8:58	63.6	63.6	
8:59	64.2	64.2	
9:00	63.8	x	60
9:01	64.2	64.2	
9:02	62.9	62.9	
9:03	64.5	64.5	
9:04	63.7	63.7	
9:05	63.8	63.8	
9:06	62.5	62.5	
9:07	63.4	63.4	
9:08	64.6	64.6	
9:09	65.0	65.0	
9:10	64.9	64.9	
9:11	65.1	65.1	
9:12	63.3	63.3	
30 Minute Leq	**64.0**	**64.1**	**60**
		Percentage Excluded	**3.3%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	282	67
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	6	67
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	26	67
I-95	NB	A	I-95_NB	I-95_NB_A		5	301	67
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	15	67
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	41	67
I-95	SB	A	I-95_SB	I-95_SB_A		5	212	67
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	13	67
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	23	67
I-95	NB	A	I-95_NB	I-95_NB_A		5	308	67
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	13	67
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	35	67
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
Max	70	70
Average	67	67
Median	#NUM!	#NUM!
Min	65	65

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	494	67	2964	67	3372	88%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	19	67	114	67	3372	3%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	49	67	294	67	3372	9%
I-95	NB	A	I-95_NB	I-95_NB_A	10	609	67	3654	67	4278	85%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	28	67	168	67	4278	4%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	76	67	456	67	4278	11%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Site Number	M12
Location:	544 Truslow Road (Stafford Nursery)
Date:	5/23/2018
Start Time:	10:00
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded
10:00	71.5	71.5	
10:01	72.8	72.8	
10:02	73.3	73.3	
10:03	72.5	72.5	
10:04	72.9	72.9	
10:05	72.5	72.5	
10:06	72.8	72.8	
10:07	70.9	70.9	
10:08	72.3	72.3	
10:09	72.0	x	60
10:10	72.4	72.4	
10:11	72.0	72.0	
10:12	71.7	71.7	
10:13	71.5	71.5	
10:14	72.5	72.5	
10:15	72.2	72.2	
10:16	72.5	x	60
10:17	73.0	73.0	
10:18	70.6	70.6	
10:19	73.0	73.0	
10:20	72.2	x	60
10:21	72.4	72.4	
10:22	70.7	70.7	
10:23	72.6	72.6	
10:24	73.3	73.3	
10:25	71.3	71.3	
10:26	74.1	74.1	
10:27	72.7	72.7	
10:28	72.0	72.0	
10:29	71.4	71.4	
30 Minute Leq	**72.3**	**72.3**	**180**
		Percentage Excluded	**10.0%**

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Looku	VehType_Lookup	Start_Time	Duration	Count	Speed
I-95	SB	A	I-95_SB	I-95_SB_A		5	270	60
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	12	60
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	33	60
I-95	NB	A	I-95_NB	I-95_NB_A		5	265	66
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	12	66
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	38	66
I-95	SB	A	I-95_SB	I-95_SB_A		5	257	60
I-95	SB	MT	I-95_SB	I-95_SB_MT		5	17	60
I-95	SB	HT	I-95_SB	I-95_SB_HT		5	38	60
I-95	NB	A	I-95_NB	I-95_NB_A		5	294	66
I-95	NB	MT	I-95_NB	I-95_NB_MT		5	3	66
I-95	NB	HT	I-95_NB	I-95_NB_HT		5	37	66
		A	_	__A				
		MT	_	__MT				
		HT	_	__HT				

	mph SB	mph NB
	53	67
	68	72
	64	65
	58	60
	61	69
	73	61
	60	66
	60	69
	62	68
	41	65
Max	73	72
Average	60	66
Median	61	67
Min	41	60

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Spee	Hour_Count	Speed	Total_Count	Percentage
I-95	SB	A	I-95_SB	I-95_SB_A	10	527	60	3162	60	3762	84%
I-95	SB	MT	I-95_SB	I-95_SB_MT	10	29	60	174	60	3762	5%
I-95	SB	HT	I-95_SB	I-95_SB_HT	10	71	60	426	60	3762	11%
I-95	NB	A	I-95_NB	I-95_NB_A	10	559	66	3354	66	3894	86%
I-95	NB	MT	I-95_NB	I-95_NB_MT	10	15	66	90	66	3894	2%
I-95	NB	HT	I-95_NB	I-95_NB_HT	10	75	66	450	66	3894	12%
	SB	A	_SB	_SB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	MT	_SB	_SB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	SB	HT	_SB	_SB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	A	_NB	_NB_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	MT	_NB	_NB_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	NB	HT	_NB	_NB_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	A	0_0	0_0_A	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	MT	0_0	0_0_MT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0:00	0:00	HT	0_0	0_0_HT	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.40297

Instrument:	**Sound Level Meter**
Model:	**824**
Manufacturer:	**Larson Davis**
Serial number:	**A0795**
Tested with:	**Microphone 40AQ s/n 19907** **Preamplifier PRM902 s/n 1208**
Type (class):	**1**
Customer:	**Harris Miller Miller & Hanson Inc.**
Tel/Fax:	**781-229-0707 x3119 / 781-229-7939**

Date Calibrated: **3/14/2018** *Cal Due:*

Status:	**Received**	**Sent**
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **77 South Bedford Street**
Burlington, MA 01803

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

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

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018

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

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.5	99.25	37.2

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Steven E. Marshall
Signature		Signature	
Date	3/14/18	Date	3/15/2018

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.40298

Instrument: **Microphone**
Model: **40AQ**
Manufacturer: **GRAS**
Serial number: **19907**
Composed of:

Date Calibrated: **3/13/2018** *Cal Due:*

Status:	**Received**	**Sent**
In tolerance:	**X**	**X**
Out of tolerance:		
See comments:		

Contains non-accredited tests: ___**Yes** _**X**_ **No**

Customer: **Harris Miller Miller & Hanson Inc.**
Tel/Fax: **781-229-0707 x3119/781-229-7939**
Address: **77 South Bedford Street**
Burlington, MA 01803

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018
4180-Brüel&Kjær	Microphone	2246115	Oct 24, 2017	DANAK / DPLA	Oct 24, 2019

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Steven E Marshall
Signature		Signature	
Date	3/13/18	Date	3/15/2018

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.40299

Instrument:	**Microphone Unit**	*Date Calibrated:*	**3/13/2018** *Cal Due:*
Model:	**40AE-PRM902**	*Status:*	**Received** / **Sent**
Manufacturer:	**GRAS**	*In tolerance:*	**X** / **X**
Serial number:	**8310-3185**	*Out of tolerance:*	
Composed of:	**Microphone 40AE s/n: 8310**	*See comments:*	
	Preamplifier PRM902 s/n: 3185	*Contains non-accredited tests:*	**__Yes _X_ No**
Customer:	**Harris Miller Miller & Hanson Inc.**	*Address:*	**77 South Bedford Street**
Tel/Fax:	**781-229-0707 x3119/781-229-7939**		**Burlington, MA 01803**

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Nov 10, 2017	Scantek, Inc./ NVLAP	Nov 10, 2018
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018
4180-Brüel&Kjær	Microphone	2246115	Oct 24, 2017	DANAK / DPLA	Oct 24, 2019

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	Steven E Marshall
Signature		Signature	
Date	3/13/18	Date	3/15/2018

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.40300

Instrument:	**Acoustical Calibrator**	*Date Calibrated:* **3/12/2018** *Cal Due:*			
Model:	**CAL250**	*Status:*	**Received**	**Sent**	
Manufacturer:	**Larson Davis**	*In tolerance:*	**X**	**X**	
Serial number:	**4182**	*Out of tolerance:*			
Class (IEC 60942):	**1L**	*See comments:*			
Barometer type:		*Contains non-accredited tests:* **__Yes _X_ No**			
Barometer s/n:					
Customer:	**Harris Miller Miller & Hanson Inc.**	*Address:*	**77 South Bedford Street**		
Tel/Fax:	**781-229-0707 x3119 / 781-229-7939**		**Burlington, MA 01803**		

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

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

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 28, 2017	Scantek, Inc./ NVLAP	Jul 28, 2018
DS-360-SRS	Function Generator	88077	Sep 15, 2016	ACR Env./ A2LA	Sep 15, 2018
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 20, 2017	ACR Env./ A2LA	Sep 20, 2018
HM30-Thommen	Meteo Station	1040170/39633	Oct 25, 2017	ACR Env./ A2LA	Oct 25, 2018
140-Norsonic	Real Time Analyzer	1403978	Mar 22, 2017	Scantek, Inc. / NVLAP	Mar 22, 2018
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
4192-Brüel&Kjær	Microphone	2854675	Nov 11, 2017	Scantek, Inc. / NVLAP	Nov 11, 2018
1203-Norsonic	Preamplifier	92268	Oct 18, 2017	Scantek, Inc./ NVLAP	Oct 18, 2018

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

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Steven E. Marshall
Signature		Signature	
Date	3/12/18	Date	3/15/2018

APPENDIX F PREDICTED TRAFFIC NOISE LEVELS

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
A-001	5112 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	62	63	NA	NA
A-002	5113 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	52	54	NA	NA
A-003	5111 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	56	57	NA	NA
A-004	5110 Brookshire CTW, Fredericksburg, VA, 22408	1	B	Res.	67	54	56	NA	NA
A-005	5113 Brookshire CTW, Fredericksburg, VA, 22408	1	B	Res.	67	49	51	NA	NA
A-006	5111 Brookshire CTW, Fredericksburg, VA, 22408	1	B	Res.	67	57	58	NA	NA
A-007	4803 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	58	60	NA	NA
A-008	4801 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	60	62	NA	NA
A-009	4800 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	59	61	NA	NA
A-010	4802 Queensbury CIR, Fredericksburg, VA, 22408	1	B	Res.	67	56	58	NA	NA
A-011	11501 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	58	60	NA	NA
A-012	11500 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	57	59	NA	NA
A-013	11502 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	56	58	NA	NA
A-014	5104 West Commons CT, Fredericksburg, VA, 22408	1	B	Res.	67	57	59	NA	NA
A-015	5105 West Commons CT, Fredericksburg, VA, 22408	1	B	Res.	67	57	59	NA	NA
A-016	11503 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	55	57	NA	NA
A-017	5102 West Commons CT, Fredericksburg, VA, 22408	1	B	Res.	67	55	57	NA	NA
A-018	5103 West Commons CT, Fredericksburg, VA, 22408	1	B	Res.	67	56	58	NA	NA
A-019	5102 Monarch CT, Fredericksburg, VA, 22408	1	B	Res.	67	57	59	NA	NA
A-020	5104 Monarch CT, Fredericksburg, VA, 22408	1	B	Res.	67	58	60	NA	NA
A-021	5105 Monarch CT, Fredericksburg, VA, 22408	1	B	Res.	67	59	61	NA	NA
A-022	5103 Monarch CT, Fredericksburg, VA, 22408	1	B	Res.	67	57	59	NA	NA
A-023	11802 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	58	60	NA	NA
A-024	11804 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	59	61	NA	NA
A-025	11805 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	63	64	NA	NA
A-026	11803 Duchess DR, Fredericksburg, VA, 22408	1	B	Res.	67	59	60	NA	NA
A-027	11802 Hoose CT, Fredericksburg, VA, 22408	1	B	Res.	67	58	58	NA	NA
A-028	11804 Hoose CT, Fredericksburg, VA, 22408	1	B	Res.	67	59	60	NA	NA
A-029	11806 Hoose CT, Fredericksburg, VA, 22408	1	B	Res.	67	62	63	NA	NA
A-030	11805 Hoose CT, Fredericksburg, VA, 22408	1	B	Res.	67	58	58	NA	NA
A-031	11804 Berwick CT, Fredericksburg, VA, 22408	1	B	Res.	67	60	62	NA	NA
A-032	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	60	NA	NA
A-033	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	60	NA	NA
A-034	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	57	59	NA	NA
A-035	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	56	58	NA	NA
A-036	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	60	NA	NA
A-037	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	59	NA	NA

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
A-038	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	60	NA	NA
A-039	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	59	60	NA	NA
A-040	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	60	NA	NA
A-041	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	58	59	NA	NA
A-042	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	57	59	NA	NA
A-043	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	57	59	NA	NA
A-044	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	57	58	NA	NA
A-045	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	56	58	NA	NA
A-046	10600 Kingswood BLVD, Fredericksburg, VA, 22408	1	C	Rec.	67	57	58	NA	NA
C-001	1208 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	**67**	**68**	60	**8**
C-002	1206 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	**68**	**70**	61	**10**
C-003	1204 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	**67**	59	**8**
C-004	1202 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	65	59	**6**
C-005	1200 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	63	59	4
C-006	1112 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	59	4
C-007	1110 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	59	4
C-008	1108 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	64	59	4
C-009	1106 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	64	59	**5**
C-010	1104 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	59	**5**
C-011	1102 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	60	4
C-012	1100 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	64	60	4
C-013	1016 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	64	60	4
C-014	1014 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	64	60	4
C-015	1012 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	65	61	4
C-016	2280 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	C	Rec.	67	65	**67**	61	**6**
C-017	2280 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	C	Rec.	67	**66**	**67**	62	**5**
C-018	2280 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	C	Rec.	67	**68**	**70**	64	**6**
C-019	1210 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	**67**	60	**7**
C-020	1212 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	65	63	2
C-021	1214 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	63	62	1
C-022	1216 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	62	60	1
C-023	1218 PICKETT CIR, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	61	60	1
C-024	1010 AUSTIN DR, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	61	59	1
C-025	1120 HAMPTON ST, FREDERICKSBURG, VA 22401	7	B	Res.	67	57	59	56	3
C-026	1109 PICKETT ST, FREDERICKSBURG, VA 22401	3	B	Res.	67	59	61	58	3
C-027	1106 HAMPTON ST, FREDERICKSBURG, VA 22401	7	B	Res.	67	58	60	56	4

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
C-028	1103 PICKETT ST, FREDERICKSBURG, VA 22401	3	B	Res.	67	59	61	58	3
C-029	1015 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	62	59	4
C-030	1013 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	59	4
C-031	1011 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	64	59	**5**
C-032	1009 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	65	60	**6**
C-033	1007 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	65	60	**6**
C-034	1005 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	**66**	60	**5**
C-035	1003 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	**66**	61	**5**
C-036	1001 PICKETT ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	**67**	62	**5**
C-037	1016 HAMPTON ST, FREDERICKSBURG, VA 22401	4	B	Res.	67	58	59	56	3
C-038	1010 HAMPTON ST, FREDERICKSBURG, VA 22401	4	B	Res.	67	58	60	57	3
C-039	1004 HAMPTON ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	60	58	2
C-040	1002 HAMPTON ST, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	61	58	2
C-041	2200 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	59	57	2
C-042	2202 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	60	58	3
C-043	2204 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	62	59	3
C-044	2206 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	60	3
C-045	2208 IDLEWILD BLVD, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	65	63	2
C-046	1210 WALKER DR, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	60	60	0
D-001	11829 Burgess LN, Fredericksburg, VA, 22408	1	B	Res.	67	**69**	**66**	NA	NA
D-002	11904 Burgess LN, Fredericksburg, VA, 22408	1	B	Res.	67	57	58	NA	NA
D-003	11925 Burgess LN, Fredericksburg, VA, 22408	1	D	Sch	52	47	48	NA	NA
D-004	11925 Burgess LN, Fredericksburg, VA, 22408	1	D	Sch	52	44	45	NA	NA
D-005	11925 Burgess LN, Fredericksburg, VA, 22408	1	D	Sch	52	43	44	NA	NA
D-005A	11925 Burgess LN, Fredericksburg, VA, 22408	1	C	Rec.	67	**71**	**72**	**67**	**6**
D-006	11925 Burgess LN, Fredericksburg, VA, 22408	1	C	Rec.	67	**67**	**69**	62	**7**
D-007	11925 Burgess LN, Fredericksburg, VA, 22408	1	C	Rec.	67	**67**	**68**	62	**6**
D-008	11925 Burgess LN, Fredericksburg, VA, 22408	1	C	Rec.	67	63	65	59	**6**
D-009	11925 Burgess LN, Fredericksburg, VA, 22408	1	C	Rec.	67	63	64	59	**5**
D-018	3102 Plank RD, Fredericksburg, VA, 22408	1	E	Com.	72	63	66	61	**5**
D-019	3102 Plank RD, Fredericksburg, VA, 22408	1	E	Com.	72	62	65	62	3
D-020	3102 Plank RD, Fredericksburg, VA, 22408	1	E	Com.	72	70	**73**	66	**7**
D-021	3102 Plank RD, Fredericksburg, VA, 22408	1	D	Int.	52	41	45	41	3
E-001	2831 PLANK RD, FREDERICKSBURG, VA 22401	1	E	Com.	72	64	67	NA	NA
E-002	2811 PLANK RD, FREDERICKSBURG, VA 22401	1	E	Com.	72	64	65	NA	NA
E-003	2805 PLANK RD, FREDERICKSBURG, VA 22401	1	E	Com.	72	61	62	NA	NA
E-004	2931 PLANK RD, FREDERICKSBURG, VA 22401	1	E	Com.	72	55	57	NA	NA

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
F-001	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	66	62	5
F-002	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	67	70	64	6
F-003	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	68	73	65	7
F-004	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	67	62	6
F-005	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	68	72	64	8
F-006	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	71	74	66	8
F-007	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	67	62	6
F-008	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	69	73	64	9
F-009	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	72	75	66	9
F-010	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	67	69	62	7
F-011	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	73	75	64	12
F-012	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	75	77	67	10
F-013	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	56	53	3
F-014	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	60	54	7
F-015	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	64	56	8
F-016	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	57	54	4
F-017	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	63	55	8
F-018	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	67	57	10
F-019	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	59	55	4
F-020	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	56	8
F-021	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	68	58	10
F-022	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	61	57	4
F-023	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	68	59	10
F-024	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	68	71	61	10
F-025	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	65	60	5
F-026	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	68	73	62	11
F-027	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	72	75	63	12
F-028	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	63	59	5
F-029	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	66	69	60	10
F-030	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	67	73	61	12
F-031	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	62	59	4
F-032	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	67	60	8
F-033	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	66	71	61	10
F-034	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	62	60	3
F-035	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	63	66	61	5
F-036	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	69	63	6

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
F-037	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	54	50	4
F-038	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	55	50	**5**
F-039	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	54	**5**
F-040	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	55	50	4
F-041	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	54	49	**5**
F-042	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	55	4
F-043	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	51	4
F-044	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	54	50	4
F-045	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	55	4
F-046	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	53	49	4
F-047	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	54	50	4
F-048	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	57	54	3
F-049	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	55	4
F-050	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	55	**8**
F-051	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	**67**	58	**10**
F-052	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	53	3
F-053	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	52	**6**
F-054	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	62	56	**6**
F-055	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	55	52	3
F-056	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	56	52	**5**
F-057	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	60	56	4
F-058	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	56	2
F-059	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	57	2
F-060	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	62	60	2
F-061	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	54	1
F-062	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	56	55	1
F-063	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	58	1
F-064	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	55	55	1
F-065	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	57	56	1
F-066	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	58	1
F-067	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	55	55	1
F-068	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	57	56	0
F-069	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	59	0
F-070	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	55	55	1
F-071	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	57	57	0
F-072	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	59	0
F-073	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	**68**	62	**6**
F-074	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**73**	**77**	64	**12**

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
F-075	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**68**	**11**
F-076	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**76**	3
F-077	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	**69**	63	**6**
F-078	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**74**	**77**	64	**12**
F-079	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**68**	**10**
F-080	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**76**	2
F-081	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**66**	**69**	63	**7**
F-082	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**74**	**77**	64	**12**
F-083	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**68**	**10**
F-084	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**76**	2
F-085	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**67**	**70**	63	**8**
F-086	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**74**	**77**	65	**12**
F-087	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**69**	**9**
F-088	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	**76**	**78**	**77**	2
F-089	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	55	55	1
F-090	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	55	55	1
F-091	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	58	57	1
F-092	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	0	0
F-093	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	56	56	1
F-094	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	55	55	1
F-095	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	59	1
F-096	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	56	56	1
F-096a	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	62	62	1
F-097	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	55	55	1
F-098	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	59	1
F-099	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	62	62	0
F-100	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	56	55	0
F-101	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	56	56	0
F-102	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	59	58	0
F-103	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	63	62	0
F-104	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	56	3
F-105	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	61	58	4
F-106	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	64	59	4
F-107	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	56	3
F-108	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	61	57	4
F-109	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	63	58	**5**
F-110	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	60	56	4

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
F-111	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	62	57	**5**
F-112	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	64	58	**6**
F-113	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	62	59	4
F-114	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	60	4
F-115	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	62	**67**	62	**5**
F-116	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	53	53	0
F-117	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	0
F-118	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	58	0
F-119	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	54	54	0
F-120	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	0
F-121	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	58	58	0
F-122	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	0
F-123	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	57	57	0
F-124	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	59	59	0
F-125	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	57	1
F-126	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	60	59	2
F-127	1150 NOBLE WAY, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	62	60	2
F-128	44 BRISCOE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	**67**	**67**	0
F-129	42 BRISCOE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	65	63	NA	NA
F-130	3430 FALL HILL AVE, FREDERICKSBURG, VA 22401	1	B	Res.	67	64	62	NA	NA
FH-001***	1011 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	57	57	4
FH-002***	1014 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	58	58	3
FH-003***	1010 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	58	3
FH-004***	1008 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	59	3
FH-005***	1006 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	61	61	3
FH-006***	1004 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	62	62	2
FH-007***	1002 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	62	62	**6**
FH-008***	1417 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	60	63	63	**8**
FH-009***	1419 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	64	**13**
FH-010***	1003 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	59	4
FH-011***	1415 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	58	61	61	**5**
FH-012***	1413 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	58	**6**
FH-013***	1005 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	**5**
FH-014***	1411 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	58	**6**
FH-015***	1007 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	4
FH-016***	1409 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	56	56	**5**
FH-017***	1009 JILLS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	4

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
FH-018***	1407 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	**5**
FH-019***	1403 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	4
FH-020***	1405 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	54	57	57	4
FH-021***	1401 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	4
FH-022***	1422 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	64	**8**
FH-023***	1424 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	64	**6**
FH-024***	1426 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	61	64	64	**6**
FH-025***	30 CURTIS ESTATES, FREDERICKSBURG, VA 22401	1	B	Res.	67	59	63	63	**5**
FH-026***	40 CURTIS ESTATES, FREDERICKSBURG, VA 22401	1	B	Res.	67	57	60	60	4
FH-027***	1420 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	56	59	59	**5**
FH-028***	1418 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	58	58	4
FH-029***	1412 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	57	57	4
FH-030***	1416 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	55	57	57	4
FH-031***	1414 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	4
FH-032***	1410 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	3
FH-033***	1408 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	4
FH-034***	1406 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	54	54	4
FH-035***	1404 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	50	53	53	4
FH-036***	1402 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	49	53	53	4
FH-037***	1400 PRESERVE LN, FREDERICKSBURG, VA 22401	1	B	Res.	67	49	52	52	4
FH-038***	1008 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	50	52	52	2
FH-039***	1006 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	50	53	53	2
FH-040***	1004 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	51	53	53	2
FH-041***	1002 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	3
FH-042***	1000 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	3
FH-043***	10 CURTIS ESTATES, FREDERICKSBURG, VA 22401	1	B	Res.	67	53	56	56	3
FH-044***	1009 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	49	51	51	3
FH-045***	1007 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	47	51	51	3
FH-046***	1005 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	47	52	52	3
FH-047***	1003 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	50	53	53	3
FH-048***	1001 JULIAS PL, FREDERICKSBURG, VA 22401	1	B	Res.	67	50	53	53	3
FH-049***	1008 JESSIS AVE, FREDERICKSBURG, VA 22401	1	B	Res.	67	52	55	55	3
FH-050***	1006 JESSIS AVE, FREDERICKSBURG, VA 22401	1	B	Res.	67	50	52	52	4
FH-051***	1004 JESSIS AVE, FREDERICKSBURG, VA 22401	1	B	Res.	67	48	51	51	3
FH-052***	1000 JESSIS AVE, FREDERICKSBURG, VA 22401	1	B	Res.	67	48	51	51	3
FH-053***	1002 JESSIS AVE, FREDERICKSBURG, VA 22401	1	B	Res.	67	48	51	51	3
FH-054***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	59	63	63	**6**

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
FH-055***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	58	61	61	**7**
FH-056***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	58	62	62	**6**
FH-057***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	58	62	62	**6**
FH-058***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	56	60	60	3
FH-059***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	56	59	59	**6**
FH-060***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	57	60	60	**6**
FH-061***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	52	55	55	1
FH-062***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	53	55	55	**6**
FH-063***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	52	54	54	**6**
FH-064***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	43	46	46	1
FH-065***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	52	55	55	**5**
FH-066***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	48	51	51	4
FH-067***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	49	51	51	4
FH-068***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	49	51	51	4
FH-069***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	49	52	52	3
FH-070***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	48	50	50	4
FH-071***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	50	51	51	4
FH-072***	1009 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	50	52	52	4
FH-073***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	45	46	46	4
FH-074***	1000 HERITAGE PARK DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	48	51	51	3
FH-079***	400 BRAGG HILL DR, FREDERICKSBURG, VA 22401	1	B	Res.	67	**74**	**77**	**66**	**10**
FH-080***	150 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	64	**66**	64	**13**
FH-081***	144 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	61	64	63	**13**
FH-082***	138 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	61	64	63	**13**
FH-083***	132 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	63	**66**	**66**	0
FH-084***	126 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	60	63	63	0
FH-085***	120 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	58	60	60	0
FH-086***	143 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	51	54	53	1
FH-087***	149 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	52	55	54	1
FH-088***	114 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	56	58	58	0
FH-089***	108 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	54	57	58	0
FH-090***	102 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	53	56	57	0
FH-091***	115 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	61	63	58	**5**
FH-092***	109 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	47	50	48	2
FH-093***	103 HUGHEY CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	45	48	47	0
FH-094***	202 BRIGHTON SQ, FREDERICKSBURG, VA 22401	3	B	Res.	67	44	47	47	0
FH-095***	208 BRIGHTON SQ, FREDERICKSBURG, VA 22401	3	B	Res.	67	45	48	48	0

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
FH-096***	214 BRIGHTON SQ, FREDERICKSBURG, VA 22401	3	B	Res.	67	66	68	62	7
FH-097***	220 BRIGHTON SQ, FREDERICKSBURG, VA 22401	3	B	Res.	67	67	70	63	7
FH-098***	403 CHADWICK CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	56	59	56	3
FH-099***	409 CHADWICK CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	57	59	56	3
FH-100***	402 CHADWICK CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	47	50	49	1
FH-101***	408 CHADWICK CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	48	50	49	1
FH-102***	414 CHADWICK CT, FREDERICKSBURG, VA 22401	3	B	Res.	67	50	52	50	2
FH-103a***	400 BRAGG HILL DR, FREDERICKSBURG, VA 22401	1	D	Int.	52	39	42	NA	NA
FH-103b***	400 BRAGG HILL DR, FREDERICKSBURG, VA 22401	1	D	Int.	52	47	50	NA	NA
FH-103c***	400 BRAGG HILL DR, FREDERICKSBURG, VA 22401	1	D	Int.	52	47	50	NA	NA
FH-104***	400 BRAGG HILL DR, FREDERICKSBURG, VA 22401	1	C	Rec.	67	67	70	69	0
FH-105***	Basketball Court on Bragg Hill Dr, FREDERICKSBURG, VA 22401	1	C	Rec.	67	60	63	58	4
FH-106***	Tennis Court on Bregg Hill Dr, FREDERICKSBURG, VA 22401	1	C	Rec.	67	65	68	61	6
G-001	1080 HOSPITALITY LN, FREDERICKSBURG, VA 22401	1	E	Com.	72	62	64	61	3
G-002	1060 HOSPITALITY LN, FREDERICKSBURG, VA 22401	1	E	Com.	72	72	74	66	7
G-003	I-95, FREDERICKSBURG, VA 22401	1	C	Rec.	67	74	76	NA	NA
G-004	I-95, FREDERICKSBURG, VA 22401	1	C	Rec.	67	73	75	NA	NA
H-001	251 RIVERSIDE PKWY, FREDERICKSBURG 22406	1	B	Res.	67	61	61	NA	NA
H-002	188 RIVERSIDE PKWY, FREDERICKSBURG 22406	1	B	Res.	67	66	68	65	3
H-003	184 RIVERSIDE PKWY, FREDERICKSBURG 22406	1	B	Res.	67	68	71	66	5
I-001	16 KRIEGER LN, FREDERICKSBURG 22405	1	B	Res.	67	62	66	61	5
I-002	12 KRIEGER LN, FREDERICKSBURG 22405	1	B	Res.	67	64	68	61	6
I-003	8 KRIEGER LN, FREDERICKSBURG 22405	1	B	Res.	67	65	69	61	8
I-004	100 MUSSELMAN RD, FREDERICKSBURG 22405	1	B	Res.	67	73	75	63	12
I-005	106 MUSSELMAN RD, FREDERICKSBURG 22405	1	B	Res.	67	68	70	61	9
I-006	110 MUSSELMAN RD, FREDERICKSBURG 22405	1	B	Res.	67	65	67	60	8
I-007	112 MUSSELMAN RD, FREDERICKSBURG 22405	1	B	Res.	67	62	65	59	6
I-008	118 MUSSELMAN RD, FREDERICKSBURG 22405	1	B	Res.	67	64	67	61	6
J-001	69 OLD FALLS RD, FREDERICKSBURG 22405	1	B	Res.	67	60	64	63	2
J-002	37 OLD FALLS RD, FREDERICKSBURG 22405	1	B	Res.	67	60	61	58	3
J-003	48 OLD FALLS RD, FREDERICKSBURG 22405	1	B	Res.	67	66	69	63	6
J-004	10 BEAGLE RD, FREDERICKSBURG 22405	1	B	Res.	67	63	65	59	6
J-005	2 BEAGLE RD, FREDERICKSBURG 22405	1	B	Res.	67	71	73	64	9
J-006	490 TRUSLOW RD, FREDERICKSBURG 22405	1	B	Res.	67	65	66	63	3
J-007	8 BEAGLE RD, FREDERICKSBURG 22405	1	B	Res.	67	67	69	62	7
J-008	478 TRUSLOW RD, FREDERICKSBURG 22405	1	B	Res.	67	63	66	61	5
J-009	Cemetery off Truslow Road, Fredericksburg 22405	1	C	Cem	67	70	72	64	8

Table F-1: Predicted Existing (2013) and Design Year (2040) Noise Levels

CNE-Site No.	Address	Units	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
K-001	536 TRUSLOW RD, FREDERICKSBURG 22406	1	B	Res.	67	**72**	**75**	**69**	**6**
K-002	54 SAMUELS LN, FREDERICKSBURG 22406	1	B	Res.	67	**66**	**68**	64	**5**
K-003	60 SAMUELS LN, FREDERICKSBURG 22406	1	B	Res.	67	65	**66**	58	**8**
L-001	Strayer University	1	D	Int.	52	45	48	NA	NA
L-002	Riverside Center for Performing Arts	1	D	Int.	52	44	46	NA	NA
L-003	Days Inn, Pool	1	E	Com.	72	58	60	NA	NA
M-001	Panera Bread	1	E	Com.	72	67	69	NA	NA
M-002	Freddy's	1	E	Com.	72	66	69	NA	NA
N-001	Chichester Park Baseball Field	1	C	Rec.	67	**66**	**66**	63	**5**
N-002	Chichester Park Baseball Field	1	C	Rec.	67	64	63	61	4
N-003	Chichester Park Baseball Field	1	C	Rec.	67	**67**	**66**	62	**7**
N-004	Chichester Park Baseball Field	1	C	Rec.	67	64	63	61	**5**
N-005	Chichester Park Baseball Field	1	C	Rec.	67	**68**	**68**	62	**8**
N-006	Chichester Park Baseball Field	1	C	Rec.	67	64	64	61	**5**
N-007	Chichester Park Baseball Field	1	C	Rec.	67	**69**	**70**	62	**9**

* Cat. Refers to FHWA Activity Category. Res.= Residential, Rec.= Recreational, Cem.= Cemetery, Com.= Commercial, Int.=Interior Institutional

** Red numbers indicate noise impact due to NAC or Substantial Increase in existing noise levels. Some subtractions may appear to be incorrect due to rounding of decibels. 0 or NA indicates receptors not behind barriers, or set back and not impacted where benefits were not determined. Shaded Rows are receptors above the point of intersection and not consdired in the evalaution of Noise Barrier F.

*** "With Barrier" sound levels in CNE FH are with the existing noise barriers north and south of Fall Hill Ave. These sound levels do not reflect the Extension to Noise Barrier FH North. See Appendix D for predicted sound levels for selected receptors behind Barrier FH North Extension. Source: HMMH, 2019

APPENDIX G RESPONSE FROM VDOT PROJECT MANAGEMENT ON ALTERNATIVE NOISE ABATEMENT MEASURES

This appendix includes a memo and survey sent to the VDOT project managers about the potential for use of alternative noise abatement measures, pursuant to Virginia House Bill 2577.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219-2000

Charles A. Kilpatrick, P.E.
Commissioner

August 21, 2014

MEMORANDUM

TO: **David Beardsley**, Project Manager
Patrick Hughes, Environmental Contact

FROM: Josh Kozlowski, Noise Abatement Specialist

SUBJECT: UPC 101595 and UPC 105510

The 2009 General Assembly passed Chapter 120 (HB 2577, as amended by HB2025), which amends the Code of Virginia by adding in Article 15 of Chapter 1 of Title 33.1 a section numbered 33.1-223.2:21 (Effective October 1, 2014 Title § 33.2-276), relating to highway noise abatement.

House Bill 2025 States: Requires that whenever the Commonwealth Transportation Board or the Department plan for or undertake any highway construction or improvement project and such project includes or may include the requirement for the mitigation of traffic noise impacts, first consideration should be given to the use of noise reducing design and low noise pavement materials and techniques in lieu of construction of noise walls or sound barriers. Vegetative screening, such as the planting of appropriate conifers, in such a design would be utilized to act as a visual screen if visual screening is required.

In an effort to honor the intent of HB 2025 we are asking for your input (per Chapter VI of Materials Division's Manual of Instruction and Section 2B-3 Determination of Roadway Design of the VDOT Road Design manual (pages 2B-5 and 2B-6)). As part of the Noise Technical Report and technical files, we are seeking your professional opinion by providing comments for the projects noted above. Please distribute this memorandum to the appropriate District staff and combine all responses into one response.

Should you have any questions, please contact me at (804) 371-6829. Thank you for your time and consideration regarding this request.

Comment: Is noise reducing design feasible in lieu of construction of noise walls or sound barriers? For example, the roadway alignment can be shifted away from noise sensitive receptors or the roadway can be placed in deep cut? (Location & Design to address)

Response: The projects are located along the I-95 corridor, mostly within existing right of way, and which is narrow and well defined. The avoidance or abatement method will be part of a combination of roadway design, wetland and stream impact minimization, minimization of right of way costs, minimization and avoidance of noise abatement costs, etc.

The Design-Builder (DB) will be responsible for establishing the alignment, and thus for creating or avoiding potential impacts. As such, the DB will have to mitigate any potential impacts. The Technical Requirements require the DB to comply with the VDOT State Noise Abatement Policy. The Technical Requirements do not specify the method. The avoidance or abatement method will be part of a combination of roadway design, wetland and stream impact minimization, minimization of right of way costs, minimization and avoidance of noise abatement costs, etc. (Dave Beardsley, Project Manager)

Comment: Can the project support the use of low noise pavement in lieu of construction of noise walls or sound barriers? (Materials Division to address)

Response: The Virginia Department of Transportation is not authorized by the Federal Highway Administration to use "quiet pavement" at this time as a form of noise mitigation. Upon completion of the Quiet Pavement Pilot Program and approval from FHWA, the use of "quiet pavement" will be given additional consideration. (Virginia Department of Transportation)

Comment: Can landscaping be utilized to act as a visual screen if visual screening is required? (Location & Design to address)

Response: The following is the text for aesthetics in the Technical Requirements:

3.13 Aesthetics

A. The Design-Builder will consider context sensitive solutions in its design. Additional information is available at http://www.fhwa.dot.gov/csd/index.cfm. The Project will be designed to harmonize with the local Environment as well as the developed themes of the local setting. The Design-Builder will coordinate with Governmental Units to develop a Project concept to achieve this harmonization. The Design-Builder will submit an aesthetics concept plan to the Private Party for review and approval. The Project concept will include (but not be limited to) the following elements to be incorporated into the final Design Documentation.

B. Landscape

1. Develop planting themes that utilize native-area and/or naturalized plant materials that exhibit good drought tolerance to the extent possible.

2. Identify existing natural, Environment assets and avoid negative impacts to the extent possible.

3. Emphasize and enhance the existing natural context and landscape to the extent possible.

4. Preserve existing trees to the extent possible.

5. Ensure that contour grading, slope rounding, channel treatment, and drainage match existing slopes and landscaping.

6. Ensure that the restoration of slopes, including regular seeding and planting of vegetation can be carried out in accordance with the Standard Documents.

C. Aesthetic Treatments

1. Aesthetic treatments will be designed to harmonize with the local landscape and architecture, as well as the developed themes of the local setting. As part of the Project design, the Design- Builder will coordinate with Governmental Units to develop an aesthetic concept to achieve this harmonization, including coordination with the Noise Abatement Committee and State Historic Preservation Office ("SHPO") as applicable.

2. The following items will be considered in defining the aesthetics concepts for the Project design:

    a. material, finish, color, and texture of sound walls, retaining walls, bridge barriers, parapet walls, abutments, wingwalls, and piers;
    b. consideration of alternative sound wall types, such as "living walls";
    c. paved and/or planted slope treatments and hardscapes at interchanges and intersections;
    d. median or other specialty paving, including material, finish and color;
    e. fencing;
    f. signage (including overhead, attached, ground-mounted, and gantries);
    g. toll equipment gantries;
    h. stormwater management and detention basins;
    i. lighting poles and lamps;
    j. camera poles and cameras; and
    k. any permanent building construction for the Project, including ancillary support, operational, rest areas and toll collections.

3. Graphics, signage, and lighting should be consistent along the entire length of the Project.

4. Aesthetic elements should be consistent throughout the corridor.

(Dave Beardsley, Project Manager)

APPENDIX H WARRANTED, FEASIBLE AND REASONABLE WORKSHEETS

This appendix provides the required Warranted, Feasible and Reasonable Worksheets for all of the noise barriers evaluated for this study.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	City of Fredericksburg
District:	Fredericksburg
Barrier System ID:	Barrier C
Community Name and/or CNE#	CNE C
Noise Abatement Category(s)	B and C
Design phase:	Preliminary design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	2005-2010
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	10
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	10
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

Reasonableness

1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	24,140 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	10
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	6
d.	Total number of benefited receptors.	16
e.	Surface Area per benefited receptor unit. (ft^2/BR)	1,509 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	Yes
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	1,609 ft
b.	Height range of the proposed noise barrier. (ft)	15 to 15
c.	Average height of the proposed noise barrier. (ft)	15 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$1,013,880
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision

Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	Yes

Additional Reasons for Decision:

This is a prelimianry design. Since the barrier is on the northbound side of I-95, the final design and and construction will be deferred to the I-95 Northbound C-D Lanes Project. The final feasibility and reasonableness determination (includig the community survey, if needed) will take place on that project.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Spotsylvania
District:	Fredericksburg
Barrier System ID:	Barrier D1
Community Name and/or CNE#	CNE D (southern end)
Noise Abatement Category(s)	C
Design phase:	Final design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-1991
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	3
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	3
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	10,036 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	3
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	2
d.	Total number of benefited receptors.	5
e.	Surface Area per benefited receptor unit. (ft^2/BR)	2,007 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	737 ft
b.	Height range of the proposed noise barrier. (ft)	9 to 24 ft
c.	Average height of the proposed noise barrier. (ft)	14 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$421,512
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier** Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:
The barrier benefits 3 impacted recreational receptors associated with a baseball field and a playground. There are two satellite buildings on church property, which are permitted as classrooms. These buildings were modeled as Activity Category D land uses. Based on an assumed 25 dB outdoor-to-indoor noise level reduction, interior levels would be below 51 dBA Leq and so interior noise impacts would not occur.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	10-Sep-18
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Spotsylvania
District:	Fredericksburg
Barrier System ID:	Barrier D2
Community Name and/or CNE#	CNE D (northern end)
Noise Abatement Category(s)	E
Design phase:	Final design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	1
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	1
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
	a. Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	8,970 SF
	b. Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
	c. Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
	d. Total number of benefited receptors.	2
	e. Surface Area per benefited receptor unit. (ft^2/BR)	4,485 SF/BR
	f. Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
	g. Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
	a. Length of the proposed noise barrier. (ft)	561 ft
	b. Height range of the proposed noise barrier. (ft)	16 to 16
	c. Average height of the proposed noise barrier. (ft)	16 ft
	d. Cost per square foot. ($/$ft^2$)	$42/SF
	e. Total Barrier Cost ($)	$376,740
	f. Barrier Material	Absorptive
3	**Community Desires Related to the Barrier** Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	City of Fredericksburg
District:	Fredericksburg
Barrier System ID:	Barrier F
Community Name and/or CNE#	CNE F
Noise Abatement Category(s)	B
Design phase:	Final design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-2016
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	38
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	38
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	20,427 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	38
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	16
d.	Total number of benefited receptors.	54
e.	Surface Area per benefited receptor unit. (ft^2/BR)	378 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	Yes
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	1,181 ft
b.	Height range of the proposed noise barrier. (ft)	16 to 18
c.	Average height of the proposed noise barrier. (ft)	17 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$857,934
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	Yes

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	Yes

Additional Reasons for Decision:

Based on the results of the survey, this barrier is recommended for construction. Note that 4th floor units are exposed to noise impact. However, the 4th floor units are above the elevation of a 30-foot high noise barrier projected onto the façade of the building, and so were not considered in this design. Note that a 24-foot high noise barrier would benefit the 4th floor units and be reasonable.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	City of Fredericksburg
District:	Fredericksburg
Barrier System ID:	Barrier FH North Extension
Community Name and/or CNE#	CNE FH North
Noise Abatement Category(s)	B and C
Design phase:	Preliminary design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-2017
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	10
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	8
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	80%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	6,466 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	8
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	3
d.	Total number of benefited receptors.	11
e.	Surface Area per benefited receptor unit. (ft^2/BR)	588 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	Yes
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	404 ft
b.	Height range of the proposed noise barrier. (ft)	16 to 16
c.	Average height of the proposed noise barrier. (ft)	16 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$271,572
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	Yes

Additional Reasons for Decision:

Noise impacts would occur behind the existing barrier on the NB side of I-95 north of Fall Hill Ave with the Build alternative. It was shown that the existing noise barrier was not reasonable. Therefore, a northward extension of the existing barrier is required to mitigate the additional impacts. This analysis is based on the incremental amount of material to mitigate these impacts. Construction deferred to the I-95 NB CD lane proje

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	10-Sep-18
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	City of Fredericksburg
District:	Fredericksburg
Barrier System ID:	Barrier G
Community Name and/or CNE#	CNE G
Noise Abatement Category(s)	E
Design phase:	Final design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-2007
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	1
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	1
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	8,768 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	0
d.	Total number of benefited receptors.	1
e.	Surface Area per benefited receptor unit. (ft^2/BR)	8,768 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	685 ft
b.	Height range of the proposed noise barrier. (ft)	12 to 14
c.	Average height of the proposed noise barrier. (ft)	13 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$368,256
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier** Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	10-Sep-18
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier H
Community Name and/or CNE#	CNE H
Noise Abatement Category(s)	B
Design phase:	Final design

	Warranted	
1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-1961
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

	Feasibility	
1	Impacted receptor units	
a.	Number of impacted receptor units:	2
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	0
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	0%
d.	Is the percentage 50 or greater?	No
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

Reasonableness

1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	30,295 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	0
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	0
d.	Total number of benefited receptors.	0
e.	Surface Area per benefited receptor unit. (ft^2/BR)	#DIV/0!
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	#DIV/0!
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	No
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	1,515 ft
b.	Height range of the proposed noise barrier. (ft)	20 to 20
c.	Average height of the proposed noise barrier. (ft)	20 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$1,272,390
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision

Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	No
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:

It was not possible to benefit the impacted residences with barrier heights in the range from 12 to 20 feet. Barrier heights above 20 feet were not considered, as the barrier would be clearly not reasonable at such heights, even if the barrier met the criteria for acoustical feasibility and the noise reduction goal.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	6-Nov-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier H (shorter length option)
Community Name and/or CNE#	CNE H
Noise Abatement Category(s)	B
Design phase:	Final design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-1961
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	2
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	1
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	50%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	22,424 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	0
d.	Total number of benefited receptors.	1
e.	Surface Area per benefited receptor unit. (ft^2/BR)	22,424 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	No
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	748 ft
b.	Height range of the proposed noise barrier. (ft)	30 to 30 ft
c.	Average height of the proposed noise barrier. (ft)	30 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$941,808
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	10-Sep-18
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier I
Community Name and/or CNE#	CNE I
Noise Abatement Category(s)	B
Design phase:	Final design

	Warranted	
1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-1969
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

	Feasibility	
1	Impacted receptor units	
a.	Number of impacted receptor units:	7
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	7
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

Reasonableness

1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	34,649 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	7
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
d.	Total number of benefited receptors.	8
e.	Surface Area per benefited receptor unit. (ft^2/BR)	4,331 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	No
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	1,732 ft
b.	Height range of the proposed noise barrier. (ft)	20 to 20
c.	Average height of the proposed noise barrier. (ft)	20 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$1,455,258
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision

Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier J1/J2
Community Name and/or CNE#	CNE J
Noise Abatement Category(s)	B
Design phase:	Final design

Warranted

1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-1990
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

Feasibility

1	Impacted receptor units	
a.	Number of impacted receptor units:	6
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	5
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	83%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

	Reasonableness	
1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	54,861 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	5
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
d.	Total number of benefited receptors.	6
e.	Surface Area per benefited receptor unit. (ft^2/BR)	9,144 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	3,049 ft
b.	Height range of the proposed noise barrier. (ft)	18 to 18
c.	Average height of the proposed noise barrier. (ft)	18 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$2,304,162
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision	
Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:
This is a system of two noise barriers - one to the south of and one to the north of Truslow Rd. Each noise barrier was also evaluated independent of the other. The noise barrier to the south was feasible and not reasonable (on its own). The barrier to the north of Truslow Road was not feasible, since it was not possible to achieve a 5 dB I.L., even with a 20-foot barrier. Taller barriers would be not reasonable.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier K1
Community Name and/or CNE#	CNE K
Noise Abatement Category(s)	B
Design phase:	Final design

	Warranted	
1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-2017
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

	Feasibility	
1	Impacted receptor units	
a.	Number of impacted receptor units:	1
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	1
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

Reasonableness

1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	6,497 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	0
d.	Total number of benefited receptors.	1
e.	Surface Area per benefited receptor unit. (ft^2/BR)	6,497 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	464 ft
b.	Height range of the proposed noise barrier. (ft)	14 to 14
c.	Average height of the proposed noise barrier. (ft)	14 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$272,874
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision

Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:
Barrier K1 also was evalauted with Barrier K2 as a system of two noise barriers with a gap between them. The barrier system also was not reasonable. The sysyem with a gap between K1 and K2 was slightly more cost-effective than a continuous noise barrier.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier K2
Community Name and/or CNE#	CNE K
Noise Abatement Category(s)	B
Design phase:	Final design

	Warranted	
1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-2017
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

	Feasibility	
1	Impacted receptor units	
a.	Number of impacted receptor units:	2
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	2
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

Reasonableness

1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	36,599 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	2
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	0
d.	Total number of benefited receptors.	2
e.	Surface Area per benefited receptor unit. (ft^2/BR)	18,300 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	1,829 ft
b.	Height range of the proposed noise barrier. (ft)	20 to 20
c.	Average height of the proposed noise barrier. (ft)	20 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$1,537,158
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision

Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:
Barrier K2 also was evalauted with Barrier K1 as a system of two noise barriers with a gap between them. The barrier system also was not reasonable. The sysyem with a gap between K1 and K2 was slightly more cost-effective than a continuous noise barrier.

VDOT Highway Traffic Noise Abatement
Warranted, Feasible, and Reasonable Worksheet

Note: Not all questions apply depending on the design phase which may cause differing answers between preliminary and final design phase. Answers to the questions may change depending on the design phase of the project.

Date:	11-Jul-19
Project No. and UPC:	0095-111-259, 0095-089-741, 0095-089-51; UPC 101595
County:	Stafford
District:	Fredericksburg
Barrier System ID:	Barrier N
Community Name and/or CNE#	CNE N
Noise Abatement Category(s)	C
Design phase:	Final design

	Warranted	
1	Community Documentation (if applicable)	
a.	Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued).	pre-2016
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	7-Sep-2017
c.	Does the date in 1.a precede the date in 1.b? If yes, proceed to Warranted Item 2. If no, consideration of noise abatement is not warranted. Proceed to "Decision" block and answer "no" to warranted question. As the reason for this decision, state that "Community was permitted after the date of approval of CE, ROD, or FONSI, as appropriate."	Yes
2	Criteria requiring consideration of noise abatement	
a.	Project causes design year noise levels to approach or exceed the Noise Abatement Criteria?	Yes
b.	Project causes a substantial noise increase of 10 dB(A) or more?	No

	Feasibility	
1	Impacted receptor units	
a.	Number of impacted receptor units:	4
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	4
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	100%
d.	Is the percentage 50 or greater?	Yes
2	Will placement of the noise barrier cause engineering or safety conflicts, e.g drainage issues or site distance issues?	NA
3	Will placement of the noise barrier restrict access to vehicular or pedestrian travel?	No
4	Will placement of the noise barrier conflict with existing utility locations?	NA

Reasonableness

1	**Surface Area (Square foot)-Benefit Factors**	
a.	Surface Area (Total square foot) of the proposed noise barrier. (ft^2)	16,557 SF
b.	Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	4
c.	Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	2
d.	Total number of benefited receptors.	6
e.	Surface Area per benefited receptor unit. (ft^2/BR)	2,760 SF/BR
f.	Is (1e) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600?	No
g.	Does the barrier provide an IL of at least 7 dB(A) for at least one impacted receptor in the design year?	Yes
2	**Additional Noise Barrier Details**	
a.	Length of the proposed noise barrier. (ft)	826 ft
b.	Height range of the proposed noise barrier. (ft)	20 to 20
c.	Average height of the proposed noise barrier. (ft)	20 ft
d.	Cost per square foot. ($/$ft^2$)	$42/SF
e.	Total Barrier Cost ($)	$695,394
f.	Barrier Material	Absorptive
3	**Community Desires Related to the Barrier**	
	Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to “decision” block and answer “no” to reasonableness question. As the reason for this decision, state that “The majority of the impacted receptor unit owners do not desire the barrier.”	

Decision

Is the Noise Barrier(s) WARRANTED?	Yes
Is the Noise Barrier(s) FEASIBLE?	Yes
Is the Noise Barrier(s) REASONABLE?	No

Additional Reasons for Decision:

APPENDIX I PUBLIC PREFERENCE SURVEY DETAILS

This appendix provides examples of the materials that were used to conduct the public preference survey and document the results of the voting.

- Cover letter and ballot that were sent to the benefited property owners and residents behind Noise Barrier F for the survey
- A figure that was included as an attachment to the letter and ballot showing the location of the proposed noise barrier.
- A figure that shows the results of the voting for Noise Barrier F.
- The mailing list for the cover letter and ballots for the survey. The list includes the resident's or property owners' name(s) and the mailing address of the resident or property owner. The list also shows the survey response or the disposition of each letter that was sent.
- A printout of the 2nd Mailing Summary tab from VDOT's Barrier Summary Voting Spreadsheet (version 1.0)
- A copy of the notification letter mailed to benefited property owners and residents behind Noise Barrier C.
- The mailing list for the notification letter for Noise Barrier C.

Additional information associated with the public survey for Noise Barrier F was provided to VDOT under a separate cover, including: scanned copies of returned ballots, written comments on the proposed noise barrier designs, and scanned copies of the returned "green cards."

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219-2000

Stephen C. Brich, P.E.
Commissioner

February 1, 2019

Hamptons at Noble, L.P.
c/o Thomas G. Johnson, Jr.
440 Monticello Ave, Suite 1700
Norfolk, Virginia 23510

Re: Noise Barrier Opinion Survey for the Hamptons at Noble Apartment Complex, in Fredericksburg, VA, in conjunction with the I-95 Southbound Collector-Distributor Lanes / Rappahannock River Crossing Project
VDOT Project No.: 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751
VDOT UPC: 101595, 110595, 112048
Fredericksburg District

Dear Property Owner:

In conjunction with the proposed I-95 Southbound Collector-Distributor (C-D) Lanes – Rappahannock River Crossing (RRC) Project, the Virginia Department of Transportation (VDOT) is asking for your input concerning a proposed noise barrier along I-95 southbound, between the Fall Hill Avenue overpass to the north and the Cowan Boulevard overpass to the south. The noise barrier under consideration is the best solution available to reduce predicted roadway noise impact at your property.

The proposed Noise Barrier F would have a length of approximately 1,181 feet and would range in height from 16 to 18 feet. The noise barrier would be located as shown on the attached graphic, along the southbound side of I-95 and completely within the VDOT right of way. The precise location of the barrier may be shifted slightly to avoid utility conflicts. It would be constructed of concrete with a sound-absorptive facing on the roadway side, but the exact texture and color have not been determined to date. The barrier is predicted to provide a noise reduction of between 5 and 12 decibels to benefited units in the Hamptons at Noble apartment complex.

Per VDOT policy, survey ballots are to be mailed to the property owner and to the residents of individual units within the apartment complex that would be affected by noise and would benefit from the noise barrier. As the property owner, we are asking not only for your opinion about the barrier, but for your help to identify specific units that should receive a survey ballot. While we have identified the physical locations of the units to be surveyed, we have not identified the specific building and/or unit numbers. Please contact us at your earliest convenience to expedite this process. We would ask that you coordinate with our subcontractor, Harris Miller Miller &

(continued on reverse)

Hanson Inc. (HMMH), on this matter. Contact information for HMMH is included in the attachment.

VDOT policy limits barrier heights to 30 feet, and dwelling units with balconies above that height cannot be included in the barrier approval process. Therefore, only units on the first to third floors of the Hamptons at Noble apartment complex can be considered. Not all of the units within the apartment complex would be benefited by the barrier, such as those units along the façade of a building that faced away from I-95 – these units are typically not impacted by highway noise. An apartment unit is said to be "benefited" if it receives a minimum of 5 decibels of traffic noise reduction by the noise barrier.

VDOT is providing the attached survey ballot to solicit and document your opinion concerning the proposed noise barrier. Please use the enclosed postage-paid envelope to return your completed ballot by **February 22, 2019**. Along with any associated comments, your vote and the votes of the residents in affected units that are benefited by this noise barrier will determine the final decision whether or not the noise barrier is carried through to construction.

Information on VDOT's noise abatement program is available on VDOT's Website, at: http://www.virginiadot.org/projects/pr-noise-walls-about.asp. The site provides information on VDOT's noise program and policies including noise barrier voting, noise walls, and a downloadable noise wall brochure.

Should you have any questions, I can be reached by phone at my office number (540) 372-3549, or at my mobile number (540) 903-8692.

Sincerely,

Robert G. Ridgell, *P.E., DBIA*
Assistant District Construction Engineer
VDOT Fredericksburg District
87 Deacon Road
Fredericksburg, VA 22405

Attachments

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219-2000

Stephen C. Brich, P.E.
Commissioner

March 13, 2019

TO THE RESIDENTS OF:
<Address> <Unit #>
Fredericksburg, Virginia 22401

Re: Noise Barrier Opinion Survey for the Hamptons at Noble Apartment Complex, in Fredericksburg, VA, in conjunction with the I-95 Southbound Collector-Distributor Lanes / Rappahannock River Crossing Project
VDOT Project No.: 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751
VDOT UPC: 101595, 110595, 112048
Fredericksburg District

Dear Resident:

This correspondence is to serve as follow-up to a ballot that was dated February 1, 2019 and distributed to some residents in the Valor Apartments Homes to provide their opinion about a proposed noise barrier for your community. It has come to our attention that not every resident who is eligible to vote had received a ballot. As a result, we have attached a new ballot that extends the period during which you may cast your vote. We request that you return the enclosed ballot to our consultant in the self addressed stamped envelope, even if you have already voted. We want to ensure that every vote has been counted and recorded. If you already received a ballot, we apologize for any confusion caused by these multiple mailings/distributions. We look forward to hearing from you.

In conjunction with the proposed I-95 Southbound Collector-Distributor (C-D) Lanes – Rappahannock River Crossing (RRC) Project, the Virginia Department of Transportation (VDOT) is asking for your input concerning a proposed noise barrier along I-95 southbound, between the Fall Hill Avenue overpass to the north and the Cowan Boulevard overpass to the south. The noise barrier under consideration is the best solution available to reduce predicted roadway noise impact at your property.

The proposed Noise Barrier F would have a length of approximately 1,181 feet and would range in height from 16 to 18 feet. The noise barrier would be located as shown on the attached graphic, along the southbound side of I-95 and completely within the VDOT right of way. The precise location of the barrier may be shifted slightly to avoid utility conflicts. It would be constructed of concrete with a sound-absorptive facing on the roadway side, but the exact texture and color have not been determined to date. The barrier is predicted to provide a noise reduction of between 5 and 12 decibels to benefited units in the Hamptons at Noble apartment complex.

(continued on reverse)

Per VDOT policy, survey ballots are to be mailed to the property owner and to the residents of individual units within the apartment complex that would be affected by noise and would benefit from the noise barrier.

VDOT is providing the attached survey ballot to solicit and document your opinion concerning the proposed noise barrier. Please use the enclosed postage-paid envelope to return your completed ballot by **April 8, 2019**. Along with any associated comments, your vote will help determine the final decision whether or not the noise barrier is carried through to construction.

Information on VDOT's noise abatement program is available on VDOT's Website, at: http://www.virginiadot.org/projects/pr-noise-walls-about.asp. The site provides information on VDOT's noise program and policies including noise barrier voting, noise walls, and a downloadable noise wall brochure.

Should you have any questions, I can be reached by phone at my office number (540) 372-3549, or at my mobile number (540) 903-8692.

Sincerely,

Robert G. Ridgell, *P.E., DBIA*
Assistant District Construction Engineer
VDOT Fredericksburg District
87 Deacon Road
Fredericksburg, VA 22405

Attachments

I-95 Southbound Collector-Distributor Lanes / Rappahannock River Crossing Project

VDOT Project No. 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751; VDOT UPC 101595, 110595, 112048

Noise Barrier F

February 1, 2019

Public Input Survey Ballot

Hamptons at Noble, L.P., c/o Thomas G. Johnson, Jr.
440 Monticello Ave, Suite 1700
Norfolk, Virginia 23510

Email: _____

Phone: _____

Are you the current property owner? ☐ Yes ☐ No

Do you want the sound barrier wall? ☐ Yes ☐ No

Comments:

_____

_____

_____

_____

_____

Signed: _____ Date: _____

Signed: _____ Date: _____

Please return the ballot using the postage-paid envelope by February 22, 2019 to VDOT's consultant. For your convenience, the mailing address is presented below in the event the postage-paid envelope is misplaced.

Ms. Kristine Collins
Harris Miller Miller & Hanson Inc.
77 South Bedford Street
Burlington, MA 01803

Thank you for your input in this roadway design process.

Recommended Noise Barrier Location

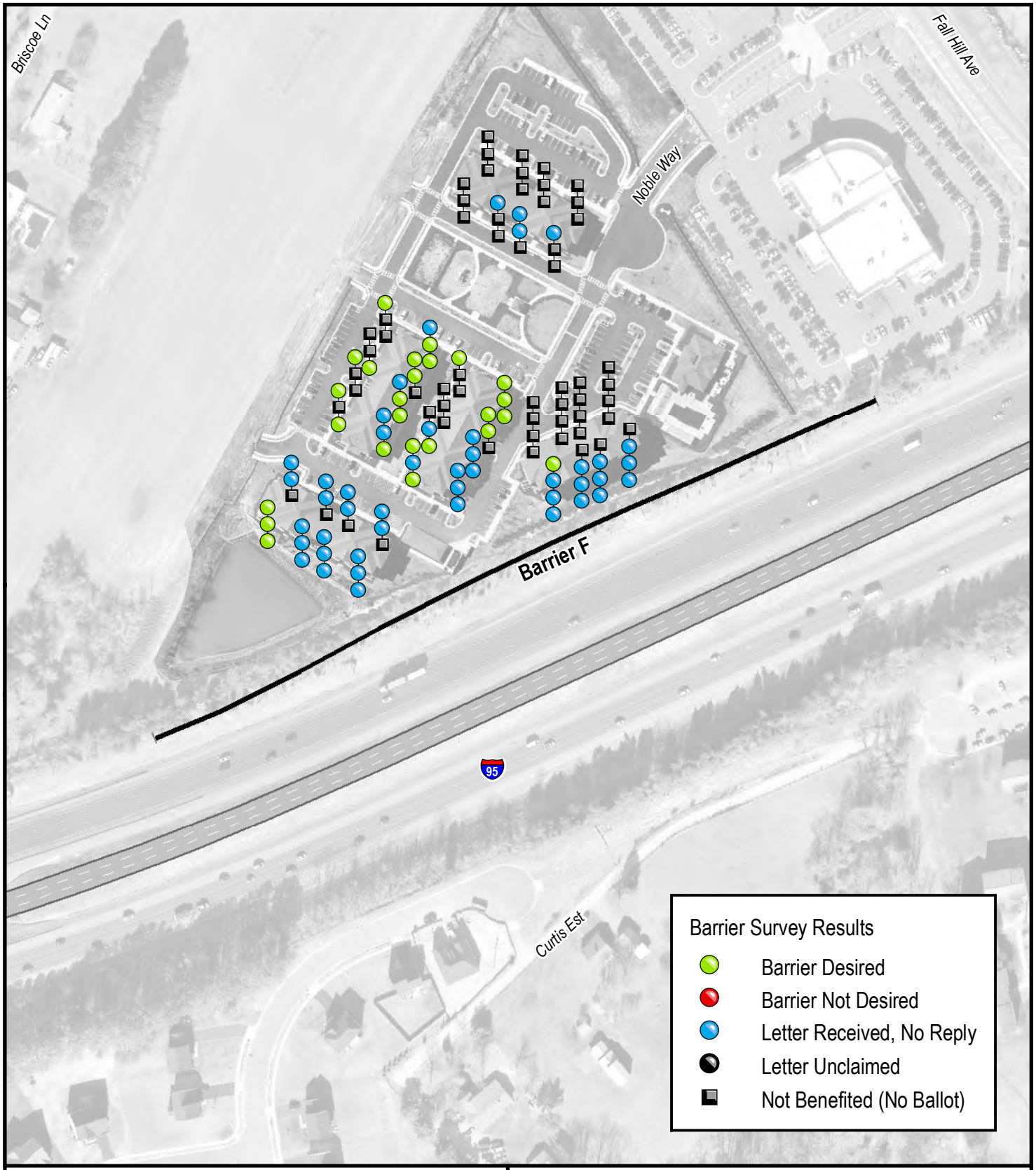
0 100 200 400 Feet

I-95 Southbound CD Lanes Design-Build Project
Proposed Noise Barrier Location Map

Hamptons at Noble, Fredericksburg, VA

January 2019

U.S. Department of Transportation
Federal Highway Administration



Recommended Noise Barrier Location

0 200 400 Feet

I-95 Southbound CD Lanes Design-Build Project
Proposed Noise Barrier Location Map

Hamptons at Noble, Fredericksburg, VA

June 2019

VDOT Virginia Department of Transportation

Document Path: \\FS1\vol1\Projects\309XXX\309720_I95_Rappahannock_River_Barrier_Design\GIS\309720_Rappahannock_River_Crossing_Survey_Results.mxd

	Name	Street Address	City	State	Zip	Other	Certified Mail #	USPS Tracking	Letter Received	Current Owner	Want Barrier	Receiver ID	Date Response Rec'd	Receptor Status	Other notes:
	Owners and Residents														
0															
0															
	[redacted]														
	Owners, not Residents														
1	Hamptons at Noble, L.P.	440 Monticello Ave, Suite 1700	Norfolk	VA	23510	Owner of apartment comlex	70141820000235268218		Y	**Y**	Y	All			Property Management has distributed ballots to tenants on their own without knowledge of the target audience; will resend to all units
	[redacted]														
	Non-owners														
1	TO RESIDENTS OF:	1171 Noble Way, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247943					F-029		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
2	TO RESIDENTS OF:	1171 Noble Way, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620320					F-026		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
3	TO RESIDENTS OF:	1171 Noble Way, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620313					F-030		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
4	TO RESIDENTS OF:	1171 Noble Way, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247950	9590940239058060942402	Y	N	N	F-027	5/16/2019	Ben/Impact_7	RESPONDED
5	TO RESIDENTS OF:	1181 Noble Way, Unit 103	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247769					F-034		No_Imp/Not_Protected	NO RESPONSE TO CONTACT BY OFFICE; not eligible to vote, since not benefited by barrier
6	TO RESIDENTS OF:	1181 Noble Way, Unit 104	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247776	9590940246228323437048	3/30/2019	N	N	F-031	4/8/2019	No_Imp/Not_Protected	NO RESPONSE TO CONTACT BY OFFICE; not eligible to vote, since not benefited by barrier
7	TO RESIDENTS OF:	1181 Noble Way, Unit 201	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247783					F-038		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
8	TO RESIDENTS OF:	1181 Noble Way, Unit 202	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247790					F-041		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
9	TO RESIDENTS OF:	1181 Noble Way, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247806	9590940246228323437031	4/1/2019	N	Y	F-035	4/3/2019	Ben/Impact_5-6	NO RESPONSE TO CONTACT BY OFFICE
10	TO RESIDENTS OF:	1181 Noble Way, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247813					F-032		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
11	TO RESIDENTS OF:	1181 Noble Way, Unit 301	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247820					F-039		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
12	TO RESIDENTS OF:	1181 Noble Way, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247837	9590940239058060945014	4/6/2019			F-036		Ben/Impact_5-6	NO RESPONSE TO CONTACT BY OFFICE
13	TO RESIDENTS OF:	1181 Noble Way, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247844	9590940239058060942365	3/30/2019	N	N	F-033	4/5/2019	Ben/Impact_7	RESPONDED
14	TO RESIDENTS OF:	**1160 Noble Way, Unit 103**	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247608	9590940239058060942358	Y			F-081		Ben/Impact_7	
15	TO RESIDENTS OF:	**1160 Noble Way, Unit 104**	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247615	9590940246228323437055	Y			F-085		Ben/Impact_7	
16	TO RESIDENTS OF:	1160 Noble Way, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247622	9590940239058060942372	Y	N	Y	F-082	4/8/2019	Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
17	TO RESIDENTS OF:	1160 Noble Way, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247639	9590940239058060942426	Y	N	Y	F-086	4/12/2019	Ben/Impact_7	RESPONDED
18	TO RESIDENTS OF:	1160 Noble Way, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247646	9590940239058060942495	Y			F-083		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
19	TO RESIDENTS OF:	1160 Noble Way, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247653	9590940239058060942136	Y	Y	Y	F-087	4/8/2019	Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
20	TO RESIDENTS OF:	1170 Noble Way, Unit 103	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247684					F-073		Ben/Impact_5-6	RESPONDED
21	TO RESIDENTS OF:	**1170 Noble Way, Unit 104**	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247691	9590940239058060942075	Y	N	Y	F-077	4/22/2019	Ben/Impact_5-6	
22	TO RESIDENTS OF:	1170 Noble Way, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247714	9590940239058060942204	Y		N	F-074	4/12/2019	Ben/Impact_7	RESPONDED
23	TO RESIDENTS OF:	1170 Noble Way, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247967					F-078		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
24	TO RESIDENTS OF:	1170 Noble Way, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247721			N	Y	F-075	4/18/2019	Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
25	TO RESIDENTS OF:	1170 Noble Way, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247738					F-079		Ben/Impact_7	RESPONDED
26	TO RESIDENTS OF:	1005 Peconic Lane, Unit 103	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620337	9590940239058060942129	Y			F-007		Ben/Impact_5-6	NOT SENT TO THESE ADDRESSES
27	TO RESIDENTS OF:	1005 Peconic Lane, Unit 104	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620344	9590940239058060942068	3/29/2019	N	Y	F-010	4/8/2019	Ben/Impact_7	NOT SENT TO THESE ADDRESSES | RECEIVED 3 FROM THIS ADDRESS AND OTHER HOH
28	TO RESIDENTS OF:	1005 Peconic Lane, Unit 201	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620351	9590940239058060942198	Y			F-020		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
29	TO RESIDENTS OF:	1005 Peconic Lane, Unit 202	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620368					F-023		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
30	TO RESIDENTS OF:	1005 Peconic Lane, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620375					F-008		Ben/Impact_7	NOT SENT TO THESE ADDRESSES
31	TO RESIDENTS OF:	1005 Peconic Lane, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620382	9590940239058060942174	Y	N	Y	F-011	4/9/2019	Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
32	TO RESIDENTS OF:	1005 Peconic Lane, Unit 301	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620399	9590940239058060942099	Y	N	Y	F-021	4/1/2019	Ben/Impact_7	NOT SENT TO THESE ADDRESSES
33	TO RESIDENTS OF:	1005 Peconic Lane, Unit 302	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620405	9590940239058060942013	Y			F-024		Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
34	TO RESIDENTS OF:	1005 Peconic Lane, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620412					F-009		Ben/Impact_7	NOT SENT TO THESE ADDRESSES
35	TO RESIDENTS OF:	1005 Peconic Lane, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620429	9590940239058060942082	Y	N	Y	F-012	4/8/2019	Ben/Impact_7	NO RESPONSE TO CONTACT BY OFFICE
36	TO RESIDENTS OF:	1170 Tuckahoe Drive, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620306	9590940239058060942006	4/9/2019			F-056		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
37	TO RESIDENTS OF:	1180 Tuckahoe Drive, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*						F-053		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
38	TO RESIDENTS OF:	1180 Tuckahoe Drive, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*						F-050		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
39	TO RESIDENTS OF:	1180 Tuckahoe Drive, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*						F-054		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
40	TO RESIDENTS OF:	1180 Tuckahoe Drive, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*						F-051		Ben/Impact_7	NOT SENT TO THESE ADDRESSES
41	TO RESIDENTS OF:	1001 Rampasture Drive, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247981	9590940246228323435037	Y			F-111		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
42	TO RESIDENTS OF:	1001 Rampasture Drive, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620290	9590940239058060941979	3/29/2019			F-115		Ben/Impact_5-6	NOT SENT TO THESE ADDRESSES
43	TO RESIDENTS OF:	1001 Rampasture Drive, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247998					F-112		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
44	TO RESIDENTS OF:	1011 Rampasture Drive, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247974					F-109		No_Imp/Protected	NOT SENT TO THESE ADDRESSES
45	TO RESIDENTS OF:	1011 Peconic Lane, Unit 103	Fredericksburg	VA	22401	*3/14/19 cjb*	70182290000127620276	9590940239058060941962	Y	N	Y	F-001	4/5/2019	Ben/Impact_5-6	
46	TO RESIDENTS OF:	1011 Peconic Lane, Unit 104	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247516					F-004		Ben/Impact_5-6	
47	TO RESIDENTS OF:	1011 Peconic Lane, Unit 201	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247523	9590940246228323436980	Y			F-014		No_Imp/Protected	
48	TO RESIDENTS OF:	1011 Peconic Lane, Unit 202	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247530	9590940239058060941993	4/2/19			F-017		No_Imp/Protected	
49	TO RESIDENTS OF:	1011 Peconic Lane, Unit 203	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247547					F-002		Ben/Impact_5-6	
50	TO RESIDENTS OF:	1011 Peconic Lane, Unit 204	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247554	9590940239058060942242	4/8/19			F-005		Ben/Impact_7	
51	TO RESIDENTS OF:	1011 Peconic Lane, Unit 301	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247561	9590940239058060942297	Y			F-015		No_Imp/Protected	
52	TO RESIDENTS OF:	1011 Peconic Lane, Unit 302	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247578					F-018		Ben/Impact_7	
53	TO RESIDENTS OF:	1011 Peconic Lane, Unit 303	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247585	9590940246228323435044	Y	N	Y	F-003		Ben/Impact_7	
54	TO RESIDENTS OF:	1011 Peconic Lane, Unit 304	Fredericksburg	VA	22401	*3/14/19 cjb*	70151660000115247592			N	Y	F-006	5/13/2019	Ben/Impact_7	

[redacted]

https://gis.fredericksburgva.gov/ParcelViewer/Account/Logon

55 # OF LETTERS SENT
18 # BALLOTS RETURNED
35 # of Follow-up Letters

UPC	101595
Project Number	0095-111-259
Barrier Name	Barrier F

2nd Mailing Summary

(Include Permitted Developments)	NAC CATEGORY	Total Number of Representative Responses Sent	Total Maxiumum Number of Representative Votes
Impacted and Benefited	B	76	380
Not Impacted and Benefited	B	28	84
Impacted and Benefited	C	0	0
Not Impacted and Benefited	C	0	0
Impacted and Benefited	D	0	0
Not Impacted and Benefited	D	0	0
Impacted and Benefited	E	0	0
Not Impacted and Benefited	E	0	0

Potential Maximum Number of Weighted Votes
464

Actual Number of Maximum Weighted Votes (Based on Responses)
335

Number of Weighted Votes Cast		
YES	NO	Total
162	6	168

Number of Total Outstanding Votes	% Total Votes Cast / % Total Actual Votes	
167	50.15	50

% of "Yes" Votes (All Votes)	% of "No" Votes (All Votes)	% of Outstanding Votes
48.4	1.8	49.9

% of "Yes" Votes (Respondents)	% of "No" Votes (Respondents)
96.4	3.6

Results in the box below should only be considered when all of the responses have been tallied

The Barrier Is Recommended for Construction

Version 1.0

Table 2 Public Opinion Survey Weighting System[6]				
Impact and benefit category	**Activity Category[4]**	**Owner and Resident**	**Non-Resident Owner**	**Renter[5]**
Impacted & Benefited	A	See note below		
Not Impacted & Benefited				
Impacted & Benefited	B[1]	5	3	2
Not Impacted & Benefited	B[1]	3	2	1
Impacted & Benefited	C[2]		5	
Not Impacted & Benefited	C[2]		3	
Impacted & Benefited	D		2	
Not Impacted & Benefited	D		1	
Impacted & Benefited	E		2	
Not Impacted & Benefited	E		1	

[1] For activity Category B Receptors only one vote per single family unit will be counted. However the owner of a multiple-family dwelling unit will be granted one vote per benefited unit. Additionally the developer of permitted lands will be granted one vote per benefited lot of the permitted phase where construction has not occurred.

[2] For activity Category C Receptors only 1 vote per facility will be granted.

[3] For activity Category G Receptors the votes will depend on the future land use. The example provided above assumes a residential development.

[4] For permitted land uses defer to the appropriate land use category.

[5] Renter is defined as non-owner resident.

[6] Consult the VDOT external website to obtain the decision making spreadsheet.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219-2000

Stephen C. Brich, P.E.
Commissioner

May 30, 2019

<Name>
<Address>
<City>, <State> <Zip>

Re: Notification of a Potential Noise Barrier for the Village of Idlewild, in Fredericksburg, in conjunction with the I-95 Southbound Rappahannock River Crossing Project
VDOT Project No.: 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751
VDOT UPC: 101595, 110595, 112048
Fredericksburg District

Dear Property Owner:

The Virginia Department of Transportation (VDOT) is planning to construct two projects along I-95 in the City of Fredericksburg and in Stafford and Spotsylvania Counties. Both projects seek to improve safety and reduce congestion by separating local traffic accessing the Route 3 and Route 17 interchanges from the general purpose lanes along I-95. The first project is the I-95 Southbound Rappahannock River Crossing Project. This Design-Build project is currently under construction and is expected to be completed in 2022. The second project is the I-95 Northbound Rappahannock River Crossing Project. VDOT issued the Request for Qualifications for this Design-Build Project on May 13, 2019. VDOT anticipates that the Design-Build contract will be awarded next spring and that the project would be completed in 2024. Information on both of these megaprojects can be found on VDOT's web page at the following link: http://www.virginiadot.org/projects/fredericksburg/default.asp.

As part of the design study for the I-95 Southbound Rappahannock River Crossing Project, VDOT made a determination that a noise barrier is warranted, feasible, and reasonable for your community. Normally, after such a determination, VDOT would survey the affected property owners and residents to solicit their viewpoints about the proposed noise barrier and whether they support barrier construction. However in this situation, the community survey will be performed as part of the design study for the I-95 Northbound Rappahannock River Crossing Project, since that project may affect the requirements for noise abatement for your community. The anticipated completion of the design study for the northbound project is early-2021.

Additional information on VDOT's noise abatement program is available on VDOT's Website, at: http://www.virginiadot.org/projects/pr-noise-walls-about.asp. The site provides information on VDOT's noise program and policies including noise barrier voting, noise walls, and a downloadable noise wall brochure.

(continued on reverse)

Should you have any questions, I can be reached by phone at my office number (540) 372-3549, or at my mobile number (540) 903-8692.

Sincerely,

Robert G. Ridgell, *P.E.*, *DBIA*
Assistant District Construction Engineer
VDOT Fredericksburg District
87 Deacon Road
Fredericksburg, VA 22405

Attachments

LNAM	ADD1	FNAM	CITY	STATE	ZIP4	ZIP5	DESC2	DESC3	DESC4	Rental	Historic	TNM_Rec
MICHAEL DAVID NICHOLS	1003 PICKETT ST	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1003 PICKETT ST	FITZGERALD MODEL	null	No	C-035
RICHARD L & MEGAN M POLLEY	1005 PICKETT ST	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1005 PICKETT ST	null	null	No	C-034
TIMOTHY JAMES MEAD	1007 PICKETT ST	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1007 PICKETT ST	null	null	No	C-033
JAMES D & KATHLEEN R HARKNESS	1009 PICKETT ST	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1009 PICKETT ST	null	null	No	C-032
WILLIAM A & LIWEN BINAXAS	1011 PICKETT ST	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1011 PICKETT ST	null	null	No	C-031
BRADLEY QUINN PAGE	1104 PICKETT ST	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1104 PICKETT ST	BARTON MODEL	null	No	C-010
KENNETH LYONS	1202 PICKETT CR	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1202 PICKETT CIR	null	null	No	C-004
ROBERT M & TINA SHELTON	1204 PICKETT CIR	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1204 PICKETT CIR	LOCKHART MODEL	null	No	C-003
CLEMONS-HILL RHONDA D &	1206 PICKETT CIR	MICHAEL W LEE	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1206 PICKETT CIR	MERCER MODEL	null	No	C-002
THOMAS L & SUSAN C WILLIAMS	1208 PICKETT CIR	null	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1208 PICKETT CIR	BARTON MODEL	null	No	C-001
AMPOMAH COMFORT &	1210 PICKETT CIR	OWUSU-SOTIA KOFI	FREDERICKSBURG	VA	null	22401	VILLAGE OF IDLEWILD LANDBAY 1	1210 PICKETT CIR	null	null	No	C-019
LINDA S CRAWFORD	2924 SE 14TH ST	null	OCALA	FL	6061	34471	VILLAGE OF IDLEWILD LANDBAY 1	1106 PICKETT ST	null	null	No	C-009
VILLAGE OF IDLEWILD HOA INC	3949 PENDER DR #205	C/O ARMSTRONG MGMT SERVICE	FAIRFAX	VA	null	22030	PHASE 1 VILLAGE OF IDLEWILD	2280 IDLEWILD BLVD	2.726	null	No	C-016, C-017, C-018
JONY JIANG & JUNE HE LIU	4401 WINDING OAK DR	null	OLNEY	MD	null	20832	VILLAGE OF IDLEWILD LANDBAY 1	1001 PICKETT ST	null	null	No	C-036

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219-2000

Stephen C. Brich, P.E.
Commissioner

July 21, 2019

<Name>
<Address>
<City>, <State> <Zip>

Re: Notification of a Potential Extension of the Noise Barrier for the Bragg Hill/Central Park Townhomes in Fredericksburg, VA
I-95 Southbound Rappahannock River Crossing Project
VDOT Project No.: 0095-111-259, P101, R201, C501; 0095-089-741; 0095-089-751
VDOT UPC: 101595, 110595, 112048
Fredericksburg District

Dear Property Owner:

The Virginia Department of Transportation (VDOT) is planning to construct two projects along I-95 in the City of Fredericksburg and in Stafford and Spotsylvania Counties. Both projects seek to improve safety and reduce congestion by separating local traffic accessing the Route 3 and Route 17 interchanges from the general purpose lanes along I-95. The first project is the I-95 Southbound Rappahannock River Crossing Project. This Design-Build project is currently under construction and is expected to be completed in 2022. The second project is the I-95 Northbound Rappahannock River Crossing Project. VDOT issued the Request for Qualifications for this Design-Build Project on May 13, 2019. VDOT anticipates that the Design-Build contract will be awarded next spring and that the project would be completed in 2024. Information on both of these megaprojects can be found on VDOT's web page at the following link: http://www.virginiadot.org/projects/fredericksburg/default.asp.

As part of the design study for the I-95 Southbound Rappahannock River Crossing Project, VDOT determined that noise impacts are predicted to occur at noise-sensitive properties behind the existing noise barrier for the Bragg Hill/Central Park Townhomes. VDOT also made a determination that a northward extension of the existing noise barrier is feasible and reasonable. Normally, after such a determination, VDOT would survey the affected property owners and residents to solicit their viewpoints about the proposed noise barrier and whether they support barrier construction. However in this situation, the community survey will be performed as part of the design study for the I-95 Northbound Rappahannock River Crossing Project, since that project may affect the requirements for noise abatement for your community. The anticipated completion of the design study for the northbound project is early-2021.

(continued on reverse)

Additional information on VDOT's noise abatement program is available on VDOT's Website, at: http://www.virginiadot.org/projects/pr-noise-walls-about.asp. The site provides information on VDOT's noise program and policies including noise barrier voting, noise walls, and a downloadable noise wall brochure.

Should you have any questions, I can be reached by phone at my office number (540) 372-3549, or at my mobile number (540) 903-8692.

Sincerely,

Robert G. Ridgell, *P.E., DBIA*
Assistant District Construction Engineer
VDOT Fredericksburg District
87 Deacon Road
Fredericksburg, VA 22405

Attachments

OBJECTID	MAP_PIN	LNAM	ADD1	FNAM	ADD2	CITY	STATE	ZIP4	ZIP5	STRT	HSE	CDYR	DESC2	DESC3	GRNTR	PRCIT	PRSTA	PRZP1	Historic
Resident and owners		***Recipient:***																	
523986	273-1-54	ARMSTRONG KIMBERLY	222 BRIGHTON SQ	null	null	FREDERICKSBURG	VA	null	22401	BRIGHTON SQ	222	2018	BRAGG HILL/CENTRAL PARK TOWNHOMES	222 BRIGHTON SQ	KANALA JAMES G TR	FREDERICKSBURG	VA	22401	No
Non-resident owners		***Recipient:***												**For property at:**					
523964	273-1-34	GOODALL M LYNNE TR	2109 FALL HILL AVE	null	null	FREDERICKSBURG	VA	null	22401	HUGHEY CT	117	2017	BRAGG HILL/CENTRAL PARK TOWNHOMES	117 HUGHEY CT	GOODALL M LYNNE	FREDERICKSBURG	VA	22401	No
523965	273-1-35	EASTERN ESTATES LLC	514 WESTWOOD OFFICE PK	null	null	FREDERICKSBURG	VA	null	22401	HUGHEY CT	115	2019	BRAGG HILL/CENTRAL PARK TOWNHOMES	115 HUGHEY CT	BROWN BRADLEY J & LUCY M	FREDERICKSBURG	VA	22401	No
523966	273-1-36	HEMSLEY RICHARD S	17926 CURTIS DR	null	null	DUMFRIES	VA	null	22026	HUGHEY CT	113	2017	BRAGG HILL/CENTRAL PARK TOWNHOMES	113 HUGHEY CT	PRINCE ANDREA	FREDERICKSBURG	VA	22401	No
523980	273-1-49	B&W TOWNHOMES LLC	PO BOX 3186	null	null	FREDERICKSBURG	VA	null	22402	BRIGHTON SQ	212	2018	BRAGG HILL/CENTRAL PARK TOWNHOMES	212 BRIGHTON SQ	CENTRAL PARK TOWNHOMES LLC	FREDERICKSBURG	VA	22401	No
523982	273-1-50	KUMAR KRISHNAN	10835 JENNIFER MARIE PL	null	null	FAIRFAX STATION	VA	null	22039	BRIGHTON SQ	214	2016	BRAGG HILL/CENTRAL PARK TOWNHOMES	214 BRIGHTON SQ	GHEE DALE A	FREDERICKSBURG	VA	22401	No
523983	273-1-51	CASS ROSE ANN	2143 JENNINGS ST	null	null	WOODBRIDGE	VA	4419	22191	BRIGHTON SQ	216	2016	BRAGG HILL/CENTRAL PARK TOWNHOMES	216 BRIGHTON SQ	null	FREDERICKSBURG	VA	22401	No
523984	273-1-52	CASS ROSE ANN	2143 JENNINGS ST	null	null	WOODBRIDGE	VA	4419	22191	BRIGHTON SQ	218	2016	BRAGG HILL/CENTRAL PARK TOWNHOMES	218 BRIGHTON SQ	null	FREDERICKSBURG	VA	22401	No
523985	273-1-53	SHARMA NALINI TR	5931 GLEN EAGLES DR	null	null	FREDERICKSBURG	VA	null	22407	BRIGHTON SQ	220	2017	BRAGG HILL/CENTRAL PARK TOWNHOMES	220 BRIGHTON SQ	SHARMA NALINI	FREDERICKSBURG	VA	22401	No
Facility Owners		***Recipient:***																	
523991	273-1-A	BRAGG HILL COMMUNITY CORP	PO BOX 7268	null	null	FREDERICKSBURG	VA	7268	22404	null	0	2017	PAR A,B,C,D, & E GREEN AREA	COMMON AREA	null	FREDERICKSBURG	VA	22401	No
527778	A19-400	KINGDOM FAMILY HOLDINGS INC	PO BOX 7772	null	null	FREDERICKSBURG	VA	null	22404	BRAGG HILL DI	400	2019	FALL HILL	400 BRAGG HILL DR	TOWER OF DELIVERANCE CHURCH	FREDERICKSBURG	VA	22401	No
Resident (non-owner)														**To the residents of:**					
523964	273-1-34	*GOODALL M LYNNE TR*	*2109 FALL HILL AVE*	*null*	*null*	*FREDERICKSBURG*	*VA*	*null*	*22401*	HUGHEY CT	117	2017	BRAGG HILL/CENTRAL PARK TOWNHOMES	117 HUGHEY CT	GOODALL M LYNNE	FREDERICKSBURG	VA	22401	No
523965	273-1-35	*EASTERN ESTATES LLC*	*514 WESTWOOD OFFICE PK*	*null*	*null*	*FREDERICKSBURG*	*VA*	*null*	*22401*	HUGHEY CT	115	2019	BRAGG HILL/CENTRAL PARK TOWNHOMES	115 HUGHEY CT	BROWN BRADLEY J & LUCY M	FREDERICKSBURG	VA	22401	No
523966	273-1-36	*HEMSLEY RICHARD S*	*17926 CURTIS DR*	*null*	*null*	*DUMFRIES*	*VA*	*null*	*22026*	HUGHEY CT	113	2017	BRAGG HILL/CENTRAL PARK TOWNHOMES	113 HUGHEY CT	PRINCE ANDREA	FREDERICKSBURG	VA	22401	No
523980	273-1-49	*B&W TOWNHOMES LLC*	*PO BOX 3186*	*null*	*null*	*FREDERICKSBURG*	*VA*	*null*	*22402*	BRIGHTON SQ	212	2018	BRAGG HILL/CENTRAL PARK TOWNHOMES	212 BRIGHTON SQ	CENTRAL PARK TOWNHOMES LLC	FREDERICKSBURG	VA	22401	No
523982	273-1-50	*KUMAR KRISHNAN*	*10835 JENNIFER MARIE PL*	*null*	*null*	*FAIRFAX STATION*	*VA*	*null*	*22039*	BRIGHTON SQ	214	2016	BRAGG HILL/CENTRAL PARK TOWNHOMES	214 BRIGHTON SQ	GHEE DALE A	FREDERICKSBURG	VA	22401	No
523983	273-1-51	*CASS ROSE ANN*	*2143 JENNINGS ST*	*null*	*null*	*WOODBRIDGE*	*VA*	*4419*	*22191*	BRIGHTON SQ	216	2016	BRAGG HILL/CENTRAL PARK TOWNHOMES	216 BRIGHTON SQ	null	FREDERICKSBURG	VA	22401	No
523984	273-1-52	*CASS ROSE ANN*	*2143 JENNINGS ST*	*null*	*null*	*WOODBRIDGE*	*VA*	*4419*	*22191*	BRIGHTON SQ	218	2016	BRAGG HILL/CENTRAL PARK TOWNHOMES	218 BRIGHTON SQ	null	FREDERICKSBURG	VA	22401	No
523985	273-1-53	*SHARMA NALINI TR*	*5931 GLEN EAGLES DR*	*null*	*null*	*FREDERICKSBURG*	*VA*	*null*	*22407*	BRIGHTON SQ	220	2017	BRAGG HILL/CENTRAL PARK TOWNHOMES	220 BRIGHTON SQ	SHARMA NALINI	FREDERICKSBURG	VA	22401	No

Source: https://gis.fredericksburgva.gov/ParcelViewer/
HMMH, 2019.

Notes: 1.) If the street address in "ADD1" was not the same as that in "DESC3", it was assumed the property owner did not reside on-site and that the dwelling unit was rented.
2.) These properties would be benefited by a northward extension of the existing noise barrier that was constructed for the Bragg Hill / Central Park townhomes as part of the Fall Hill Avenue Widening Project (UPC 88699)