



Route 638 (Rolling Road) - Widen to Four Lanes

Categorical Exclusion Reevaluation

Federal Project Number: STP-5401(691)

Project Number: 0638-029-156, C504, P104, R204

From: 0.369 Miles North of Route 286 (Fairfax County Parkway)

To: Route 644 (Old Keene Mill Road)

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Appendix A: 2016 VDOT Air Report

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1 General Information

Project Name: Route 638 (Rolling Road) - Widen to Four Lanes

Federal Project Number: STP-5401(691)

Project Number: 0638-029-156, C504, P104, R204

Project Type: Construction

Route Number: 638

Route Type: Secondary

Project Limit:

From: 0.369 Miles North of Route 286 (Fairfax County Parkway) intersection

To: Route 644 (Old Keene Mill Road) intersection

District: Northern Virginia

City/County: Fairfax

Residency: Fairfax

Date CE level document approved by VA Division FHWA: 12/08/2006

FHWA Contact: Sundra, Ed

Date CE level Reevaluation document concurrence by VA Division FHWA:

FHWA Contact: John Simkins

Project in STIP: Yes

In Long Range Plan? Yes

CE Category 23 CFR 771.117: d01

Description of Category: Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g. parking, weaving, turning, climbing).

Logical Termini and Independent Utility: Yes

Comments: None

Typical Section: The typical section consists of two 11-foot through lanes with seven-foot parking lanes in specific areas and 2.5-foot curb and gutter shoulders, to include shared-use pedestrian/bicycle paths and a four to 16-foot wide, variable-raised median.

Structures: None

2 Proposed Action and Purpose

The project proposes to widen Route 638 (Rolling Road) from two lanes to four lanes, with left and right turn lanes, stormwater management facilities, and provide accommodations for pedestrians and bicyclists. The purpose of the project is to improve safety and reduce congestion along the increasingly used corridor

3 Background

The project initiated in 1988. Project Development began in the early 2000s. A Categorical Exclusion (CE) was prepared for the project and accepted by the Federal Highway Administration (FHWA) on November 27, 2007. The CE was available to the public for review and comment at the Design Public Hearing meeting on June 12, 2008. Funds for the project were removed in 2009 and the project was put on hold. Project Development was re-initiated when funds were restored in 2015. Pursuant to 23 CFR 771.129, this reevaluation of the 2007 Categorical Exclusion is being prepared to determine what effects changes to the project, to the affected environment, or to applicable environmental laws and regulations might have on the validity of the approved NEPA document.

4 Environmental Summary

- **Existing Conditions**

- The land use throughout the corridor consists primarily of single-family residences with the exception of the northeastern portion of the project, which is a privately owned golf and country club, best characterized as commercial land use.

- **Right-of-Way and Relocations**

- Currently the project is not proposing any residential, commercial or non-profit relocations.
- Approximately 152 parcels will be impacted by the project. Proposed Right-of-Way acreage required for this project is:

Right-of-Way Totals		
Category	Number of Parcels Effected	Acres
Fee Take	125	1.813
Permanent Easements	33	0.415
Temporary Easements	150	2.673
Utility Easements	57	0.632

- **Socioeconomics and Land Use**

- Environmental Justice (EJ) Analysis was conducted for the project utilizing data from the 2010 U.S. Census Bureau and the *2018 VDOT Stage 1 Relocation Report*.
- None of the minority populations of the census block groups within the environmental justice (EJ) study area have been identified to be adversely impacted by the proposed project (i.e., no relocations, no displacements, no disruption of community, and no disruption of emergency services). Therefore, in accordance with the provisions of Executive Order (E.O.) 12898 and Federal Highway Administration (FHWA) Order 6640.23, no further EJ analysis is required.
- No low income households have been identified to be adversely impacted by the proposed project. Each of the census tracts within the EJ study area exceed the 2015 Health and Human Services (HHS) Poverty Guidelines for median household income; therefore no low income population is considered to be present.
- The proposed project is consistent with local land use as defined by the County's Department of Transportation and Department of Planning & Zoning records.

- **Traffic**

- Information for this section was obtained from VDOT's 2017 Traffic Analysis Report. Rolling Road is to be widened between Viola Street and Old Keene Mill Road from a two-lane, undivided road to a four-lane divided road. Capacity and queuing were analyzed for existing year (2014), build-out year (2022), and design year (2042) traffic conditions, including no-build scenarios.
- **Summary of Existing Year (2014) Results**
Currently, the eastbound and westbound stop-controlled approaches operate at level of service (LOS) E or F at the following intersections:
 - Rolling Road at Viola Street
 - Rolling Road at Springfield Village Drive
 - Rolling Road at Greeley Boulevard – In addition to the side streets, the overall intersection operates at LOS F during the PM peak hour.

Several movements at the intersection of Rolling Road at Old Keene Mill Road operate at LOS E or F. The overall intersection operates at LOS E or F, with delay of over one minute per vehicle in both peak hours.

- **Summary of Build-Out Year (2022) Results**
A comparison of the build-out versus no-build scenarios shows the following major improvements at the study intersections for future 2022 traffic scenarios:
 - Rolling Road at Viola Street: With the project improvements, the eastbound approach improves from F to E with an approximately one (1) minute/vehicle reduction in delay, and the westbound approach improves from LOS F to D during the AM peak hour. During the PM peak hour, delay for the eastbound

approach reduces by eight (8) minutes/vehicle, and the westbound approach delay reduces by three (3) minutes/vehicle.

- Rolling Road at Springfield Village Drive: During the AM peak hour, the eastbound approach improves from LOS F to D, and the westbound approach improves from LOS F to E with a 0.7 minutes/vehicle reduction in delay. During the PM peak hour, the eastbound approach improves from LOS F to E with a 1.7 minutes/vehicle reduction in delay, and delay for the westbound approach reduces by four (4) minutes/vehicle.
- Rolling Road at Barnack Drive: The eastbound approach improves from LOS E to D during the PM peak hour.
- Rolling Road at Greeley Boulevard: With the warranted traffic signal, the overall intersection improves from LOS F to B during the PM peak hour. During the AM peak hour, the eastbound approach improves from LOS F to D.
- Rolling Road at Old Keene Mill Road: With an additional northbound left turn lane, this movement improves from LOS F to E in the AM peak hour. In the PM peak hour, delay for the left turn movement decreases by 1.7 minutes/vehicle.

○ **Summary of Design Year (2042) Results**

In the design year traffic conditions, the following improvements are expected at the major study intersections:

- Rolling Road at Viola Street: The overall intersection improves from LOS F to D in the PM peak hour.
- Rolling Road at Springfield Village Drive: During the PM peak hour, the overall intersection improves from LOS F to E, and delay is reduced by 1.5 minutes/vehicle.
- Rolling Road at Barnack Drive: The intersection improves from LOS E or F to LOS B or better in both AM and PM peak hours.
- Rolling Road at Greeley Boulevard: The intersection improves from LOS F to D or better during AM and PM peak hours.
- Rolling Road at Old Keene Mill Road: With dual left turn lanes, delay for the northbound left turns reduces by two (2) to four (4) minutes/vehicle in both AM and PM peak hours.

Queuing analysis results indicate that the proposed turn lane lengths can accommodate the expected 95th percentile queue lengths.

○ **Conclusion Summary**

The proposed improvements result in a substantial reduction in delays along Rolling Road between Viola Street and Old Keene Mill Road. Traffic operations are evaluated at the corridor level for 2042 design year traffic conditions by comparing build-out versus no-build scenarios. The travel time is the sum of the running time and signal delays between Viola Street and Old Keene Mill Road intersection. During the AM peak hour, travel time in the northbound direction increases by eight (8) percent due to signal delays at Greeley Boulevard intersection. In the southbound

direction, travel time reduces by 13 percent. During the PM peak hour, travel time along the corridor reduces by 30 to 37 percent in both directions.

- **Access**

- According to the 2017 Traffic Analysis Report, access management strategies along the corridor for the project include the installation of a variable-width raised median as well as removing left turns to and from low-volume driveways and side streets. These changes will increase safety along the corridor by reducing vehicles ability to make unprotected movements across two (2) lanes of traffic and dedicating left turn movements at major intersections. Additionally, a four-way intersection will be installed at the Greeley Blvd/Rolling Road intersection to assist in managing turning movements and through traffic at that intersection. Other access management strategies would be incorporated into the project such as bringing all driveways of the street-facing properties along the project corridor up to current standards increasing site distance for those properties and visibility for on-coming traffic.

- **Cultural Resources**

- Pursuant to Stipulation 2 of 1999 Programmatic Agreement between VDOT and DHR, a determination of No Effect was made on June 22, 2006. A *Phase I Cultural Resources Survey Report* was completed in June 2016 and did not identify any properties with the Area of Potential Effects (APE) as individually eligible or as contributing elements for National Register of Historic Places listing. Additionally, the project has little to no potential to effect historic properties, either directly or indirectly (e.g., visual effects) as there are no ground resources within the actual project limits and no above ground resources that would be affected by line of sight by the project. Concurrence on the results of the report was received from the Virginia Department of Historic Resources (DHR) on July 20, 2016 and the No Effect determination for the project remains valid.

- **Section 4(f)/6(f)**

- There are three (3) public parks within 0.25 miles of the project area protected under Section 4(f). None of these parks were acquired or developed using Section 6(f) funds. The project will not require any Section 4(f) use of these public parks.

- **Natural Resources**

- An Information, Planning and Conservation (IPAC) review for this project was initially concluded on October 3, 2016. A follow up review was concluded on November 22, 2017. The review was consistent with the findings of the 2016 review which identified the Northern Long-Eared Bat (*Myotis septentrionalis*) as a consideration for potential affect by this project. The project is relying upon the findings of the January 5, 2016 Programmatic Biological Opinion for Final 4(d) Rule on the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions to fulfill project-specific Section 7 responsibilities. The request for concurrence of the applicability to use the 4(d) Rule for the project was submitted to U.S. Fish and Wildlife Service (USFWS) on October 2, 2016. No response was received from USFWS. In accordance with their email receipt for the project review received on October 3, 2016, USFWS concurs with VDOT's determination of May Affect (MA)

- as stated in their online self-certification letter. No other federal species were identified during review of available information.
- Based on review of the most current design plans and the most recent Drainage Report Analysis study from November 2016, the 100-year floodplain for the unnamed tributary to Accotink Creek will not change as result of the project.
 - A Waters of the U.S. (WOTUS) inventory study was conducted for the project corridor in July 2016. From that study, WOTUS present in the project area are associated with the drainage network of an unnamed tributary to Accotink Creek within the Occoquan River watershed. Proposed impacts to this unnamed tributary as a result of a culvert box extension are anticipated to qualify for a Virginia Department of Environmental Quality (DEQ) Virginia Water Protection (VWP) General Permit and an U.S. Army Corps of Engineers (USACE) State Programmatic General Permit. Due to engineering constraints, there are no practical alternatives to the proposed impacts. All practicable measures to minimize harm to any WOTUS will be considered during the water quality permitting process. Mitigation will not be required if wetland impacts are avoided and there is less than 300 linear feet of stream impacts.
 - Based on a search of available VDOT Geographic Information Systems (GIS) information, no ground/surface water wells are located within 0.25 miles of the project corridor.
- **Agricultural/Forestral District or Open Space Easements Present**
 - Based on a search of available VDOT GIS information, no Agricultural/Forestral Districts or Open Space Easements are present within a 0.25-mile radius of the project limits.
- **Noise Impacts**
 - This project is a Type 1 project and a *Noise Impact Analysis Report* dated June 1, 2007 was prepared to support the 2007 CE. Noise impacts were identified for 133 receptors along the project study corridor under the Design Year 2031 Build condition. Noise barriers were found to be feasible but only two proposed barriers would be considered reasonable under the cost effective criteria in effect at the time. A *Preliminary Noise Analysis Final Technical Report* was prepared in November 2017 to reassess noise impacts for Design Year 2040. The report identified 121 receptors (119 residencies and two (2) recreational sites) predicted to experience noise impacts in the Design Year 2040 condition. Eleven noise barriers were evaluated to abate noise impacts. Ten noise barriers were determined to be both preliminarily feasible and reasonable for 61 dwellings. A final decision on the feasibility and reasonableness of noise barriers would be made during the noise barrier analysis conducted during the final design phase of the project after the project design is developed and traffic is updated.
- **Air Quality**
 - Carbon Monoxide (CO) - This project is located in a CO attainment area. A CO microscale analysis is not required for this project per VDOT's Air Study Update Report from April 12, 2016. The design year 24-hour forecasted traffic does not

exceed the thresholds contained in VDOT's Project-Level Carbon Monoxide Air Quality Studies Agreement with FHWA dated February 27, 2009, and therefore does not require a project-level CO air quality analysis. In addition, an air study for the project was completed in 2007, which considered not only the mainline but cross-street traffic as well, and its conclusion that the National Ambient Air Quality Standards would be met would not be expected to change with a new study. A new or updated air study is not required.

- Ozone - This project is located in an 8-hour Ozone Nonattainment Area. Federal conformity requirements apply since the project is located, at least in part, in an air quality nonattainment or maintenance area.

- **Hazardous Materials**

- A Phase I Environmental Site Assessment (ESA) dated 2007 identified one (1) potential Recognized Environmental Condition (REC) within the study area; the Sunoco service station located near the intersection of Old Keene Mill Road and Rolling Road. Since the Sunoco property is not a total take, and proposed construction near this facility is most likely on previous fill material, an additional hazardous materials investigation is not warranted at this time. A subsequent Phase II ESA dated 2016 was conducted within the proposed Right-of-Way of the project adjacent to the Sunoco gas station. Results of the soil and groundwater samples from this study are below the detection limits for selected pollutants.

- **Invasive Species**

- The Virginia Department of Conservation and Recreation (VDCR) is unable to determine whether any invasive plant species are within the project study area. VDCR indicated that the potential exists for some VDOT projects to further the establishment of invasive species. All seed mixes used for the project will be tested in accordance with the Virginia Seed Law to ensure there are not prohibited Noxious Weed-Seeds in the seed mixes.

- **Indirect and Cumulative Impacts to Land Use & Planned Growth**

- It is not anticipated for the project to spur any significant changes in land use or planned growth as development in the area has almost reached full potential of its intended land use as dictated by the 2014 Fairfax County Comprehensive Plan (Board of Supervisors, 2017). This plan includes additional future development in the form of four to five homes per acre at the northern terminus of the project to approximately 0.34 miles southeast of the project's southern terminus, but no other planned growth for the area. According to 2014 Fairfax County's 6-Year Transportation Priorities (Board of Supervisors, 2014) and VDOT's 2017 Six Year Improvement Plan (Commonwealth Transportation Board, 2017), the Rolling Road Northbound Additional Left Turning Lane project is the only proposed project adjacent to the subject project. Individually or combined these projects would not adversely affect the current land use of the area. Furthermore, these proposed projects will have minimal to no long term adverse indirect or cumulative environmental impacts on community facilities, businesses or residents to the area, but in the long term intend to facilitate shorter travel times and more options for pedestrians and bicyclist for travel.

- Anticipated long-term adverse environmental impacts include increased impervious surface. However, the proposed project will mitigate the increase in impervious surfaces with its stormwater management plan. Little to no natural areas exist throughout the corridor so impacts to wildlife would be minimal and primarily temporary in nature associated with the construction of the project.

- **Public Involvement/Coordination**

Since the project was reinitiated in 2015, two Public Information Meetings have been held on June 22, 2016 and November 30, 2017. Meetings with homeowners associations (HOAs) and residents directly adjacent to the project were conducted on September 15, 2016; September 22, 2016; September 27, 2016; and November 8, 2017. A new Design Public Hearing meeting will be scheduled in February 2018 and this Reevaluation will be made available for public review and comment.

5 Findings/Conclusion

The proposed action involves the widening of Route 638 from 0.353 mile north of Route 286 (Fairfax County Parkway) intersection to Route 644 (Old Keene Mill Road). The Reevaluation documents scope changes since the Categorical Exclusion was completed 2007, as well as new information and circumstances associated with the proposed action. VDOT believes this project continues to meet the criteria for a Categorical Exclusion pursuant to 23 CFR 771.117 and will not result in significant impacts to the human or natural environment.

6 References

Board of Supervisors (2017, October 24 Amended). *Fairfax County Comprehensive Plan*. Fairfax, Virginia: Fairfax County Government. Retrieved January 29, 2018 from <https://www.fairfaxcounty.gov/planning-zoning/fairfax-county-comprehensive-plan>.

Board of Supervisors. *Fairfax County 6-Year Transportation Priorities*. Fairfax, Virginia: Fairfax County Government. Retrieved January 29, 2018 from <https://www.fairfaxcounty.gov/transportation/6year-priorities>.

Commonwealth Transportation Board. *2017 Six Year Improvement Plan*. Richmond, Virginia: Commonwealth of Virginia Government. Retrieved January 29, 2018 from <http://www.virginiadot.org/projects/syp-default.asp>.

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APPENDIX A

2016 VDOT Air Report

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Project Information

Project Name: Rt. 638 (Rolling Road) - Widen to four lanes

Project Number: 0638-029-156, C504, P104, R204 **UPC:** 5559

Route Number: 638

Project Limit - From: 0.369 MILE NORTH ROUTE 286 (FAIRFAX COUNTY PARKWAY) **To:** ROUTE 644 (OLD KEENE MILL ROAD)

District	City/County	Residency
Northern Virginia	Fairfax	Fairfax

IPM Project Description: ROLLING ROAD - RTE 638 - WIDEN TO 4 LANES

Air Quality: Yes

Additional Project Description: Rt. 638 (Rolling Road) - Widen to four lanes -
New Project Limits -
From: 0.353 mile north of Route 7100 (Fairfax County Parkway) Intersection -
To: Route 644 (Old Keene Mill Road) Intersection

Funding Source: Federal

PPTA/LAP

Locally Administered? No **PPTA?** No

Traffic Data

Design Year: 2042	Design Year Traffic ADT: 36,000
Existing Year: 2013	Existing Year Traffic ADT: 21,000
Project Opening Year:	

TASK INFORMATION

Task/Subtask	PED	AED	Assigned To
Air Study	04/30/2002	04/30/2002	CEDAR, VDOT -
Update Study	08/31/2007	05/04/2007	Henley, Laurie C.
Air Study Update	07/29/2016	04/12/2016	Voigt, Christopher G.

I. Carbon Monoxide

This project is located in: A Carbon Monoxide Attainment Area

CO Microscale Analysis Required for NEPA? No

- The design year 24-hour forecasted traffic does not exceed the thresholds contained in VDOT's Project-Level Carbon Monoxide Air Quality Studies Agreement with FHWA dated February 27, 2009, and therefore does not require a project-level CO air quality analysis.

The project does not include or directly affect any roadway whose design year average daily traffic volume, skew angle or level of service would exceed the threshold criteria specified in the 2009 Agreement between the Federal Highway Administration (FHWA) and the Virginia Department of Transportation (VDOT) for streamlining the project-level air quality analysis process for carbon monoxide (CO). Modeling using "worst-case" parameters has been conducted for these thresholds and it has been determined that projects, such as this one, for which the thresholds would not be exceeded would not significantly impact air quality and would not cause or contribute to a new violation, increase the frequency or severity of an existing violation, or delay timely attainment of the National Ambient Air Quality Standards for carbon monoxide. Although the traffic thresholds contained in the 2009 Agreement were developed using EPA's MOBILE6.2 Mobile Source Emission Factor Model, and EPA's Motor Vehicle Emission Simulator (MOVES2010b) is currently required for use on all new projects that require CO hotspot analyses, FHWA and VDOT both concur that the 2009 Agreement is still appropriate for use to streamline project-level CO air quality analyses since the traffic thresholds contained within are considered more conservative or worst-case than those that would be developed using MOVES2010b. This is anticipated because CO emission rates from MOVES2010 have been found to be generally lower than those from MOBILE6.2 as documented in the paper titled "Implications of the MOVES2010 Model on Mobile Source Emission Estimates" by Michael Claggett in FHWA's Resource Center, Air Quality Team. In addition, since the 2009 Agreement was executed, the cleanliness of the fleet has continued to improve due to the continued implementation of EPA's stringent Tier 2 engine emission standards coupled with fleet turnover. Therefore, the thresholds established in the 2009 Agreement, which do not account for the benefits of fleet turnover and engine improvements since the agreement was executed, are considered conservative for projects that meet those thresholds and have an upcoming opening date.

Comments: The design year 2042 ADT for the build scenario mainline is only 36 thousand, which is well below the threshold established in the 2009 FHWA-VDOT Programmatic Agreement for project-specific CO modeling. In addition, an air study for the project was completed in 2007, which considered not only the mainline but cross-street traffic as well, and its conclusion that the NAAQS would be met would not be expected to change with a new study. A new or updated air study is not required.

II. Ozone

This project is located in: An 8-hour Ozone Nonattainment Area

- Federal conformity requirements apply since the project is located, at least in part, in an air quality nonattainment or maintenance area. Accordingly, there must be a currently conforming transportation plan and program at the time of project approval, and the project must come from a conforming plan and program (or otherwise meet criteria specified in 40 CFR 93.109(b)).

This project is located in a VOC/NOx Emission Control Area. All reasonable precautions should be taken to limit VOCs and NOx emissions. Restrictions and prohibitions may apply to open burning, fugitive dust and the use of cutback asphalt, particularly during the months of April through October. Refer to DEQ's Open Burning Regulation (9 VAC 5-130-10 et seq.); Cutback Asphalt Regulation (9 VAC 5-40-5490 et seq.); and Fugitive Dust Regulation (9 VAC 5-50-60 et seq.) for requirements.

III. Particulate Matter

This project is located in: A PM2.5 Maintenance Area

- Federal conformity requirements apply since the project is located, at least in part, in an air quality nonattainment or maintenance area. Accordingly, there must be a currently conforming transportation plan and program at the time of project approval, and the project must come from a conforming plan and program (or otherwise meet criteria specified in 40 CFR 93.109(b)).

PM Hotspot Analysis Required for NEPA? No

Yes No

- Is this project a new or expanded highway project that serves a significant volume of or will result in a significant increase in diesel vehicles, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic?

Explained: The forecast volume and truck percent do not meet the criteria specified in 2016 VDOT Resource Document (App. L) to be considered potentially a project of air quality concern for PM. For the mainline, the 2042 design year ADT is only 36 thousand with 1.8% trucks daily. Additionally, the air study completed in 2007 for the project considered not only the mainline but cross-street traffic as well, and its conclusion that the project was not one of air quality concern for PM would not be expected to change with a new study. The 2007 study indicated that the highest (2039) design year volume on any affected roadway (a cross-street) would be only 59,800 with 3% diesel traffic, which was forecast for Route 644 (Old Keene Mill Road) at the northern terminus of the corridor.

- Does this project create a new or expanded bus or rail terminal or transfer point that will have, or result in an increase of, a significant number of diesel vehicles congregating at that location?

Explained: No

- Does this project affect intersections that are at LOS D, E or F with a significant number of diesel vehicles, or that will change to LOS D, E or F because of increased traffic volumes from a significant number of diesel vehicles related to the project?

Explained: Diesel volumes are not significant.

- [] [X] Can this project otherwise be considered a project of "air quality concern" as outlined in 40 CFR 93.123 (b)(1) (i),(ii),(iii) or (iv) or (v), or following recommendations obtained through the VDOT PM2.5 Hotspot Screening Process?

Explained: N/A

The final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in Fine Particulate Matter (PM2.5) nonattainment and maintenance areas was published on March 10, 2006. This project is located in the Northern Virginia PM2.5 nonattainment area.

Transportation Conformity Guidance for Qualitative Hot-spot Analysis in PM2.5 and PM10 Nonattainment and Maintenance Areas, circulated on March 29, 2006, outlines how to conduct qualitative PM2.5 hot-spot analyses for "projects of air quality concern", as defined in the final rule by 40 CFR 93.123(b)(1). Projects of air quality concern are highway and transit projects that involve significant levels of diesel traffic, or any project that is identified as a localized air quality concern by the PM2.5 State Implementation Plan (SIP). The guidance also notes that a PM2.5 hot-spot analysis is not required for projects that are not an air quality concern, but states that the project-level conformity determination should document Clean Air Act and 40 CFR 93.116 requirements were met without a hot-spot analysis, since the project has been found to not be of air quality concern under 40 CFR 93.123(b)(1).

A comparison of this project with examples of projects considered to be "projects of air quality concern" (that would be covered by 40 CFR 93.123(b)(1) and would require a qualitative PM2.5 hot-spot analysis) shows that this project is not a "project of air quality concern". The construction of this project would not result in a significant increase in the number of diesel vehicles in the area.

Since the project was not found to be a project of air quality concern under 40 CFR 91.123(b)(1), a PM2.5 hot-spot analysis is not required. The following statement should be added to the environmental document for the proposed project:

A PM2.5 hot-spot analysis is not required for this project since it is not an air quality concern. The Clean Air Act and 40 CFR 93.116 requirements were met without a hot-spot analysis, since this project has been found not to be of air quality concern under 40 CFR 93.123(b)(1).

IV. Mobile Source Air Toxics

This project requires: A qualitative MSAT analysis

This project requires a qualitative MSAT analysis. Please see the appendix for the appropriate language to be included in the environmental document.

Comments

Comments (VDEQ 2013): This project is located within a moderate 8-hour ozone nonattainment area, a fine particulate matter (PM2.5) nonattainment area*, and a volatile organic compounds (VOC) and nitrogen oxides (NOx) Emissions Control Area. As such, all reasonable precautions should be taken to limit the emissions of VOC, NOx, and particulate matter. In addition, the following VDEQ air pollution regulations must be adhered to during the construction of this project: 9 VAC 5-130, Open Burning restrictions; 9 VAC 5-45, Article 7, Cutback Asphalt restrictions; and 9 VAC 5-50, Article 1, Fugitive Dust precautions.

* Re-designated by EPA to maintenance for PM2.5 effective 11/5/2014.

Qualitative Analysis for Mobile Source Air Toxics

BACKGROUND

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), the U.S. Environmental Protection Agency (EPA) also regulates air toxics. Most air toxics originate from man-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes and locomotives), area sources (e.g., dry cleaners and gas stations), and stationary sources (e.g., factories and refineries). Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (<http://cfcpub.epa.gov/ncea/iris/index.cfm>). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (<http://www.epa.gov/ttn/atw/nata1999/>). These are *acrolein*, *benzene*, *1,3-butadiene*, *diesel particulate matter plus diesel exhaust organic gases (diesel PM)*, *formaldehyde*, *naphthalene*, and *polycyclic organic matter*. While the U.S. Federal Highway Administration (FHWA) considers these the priority mobile source air toxics (MSAT), the list is subject to change and may be adjusted in consideration of future EPA rules.

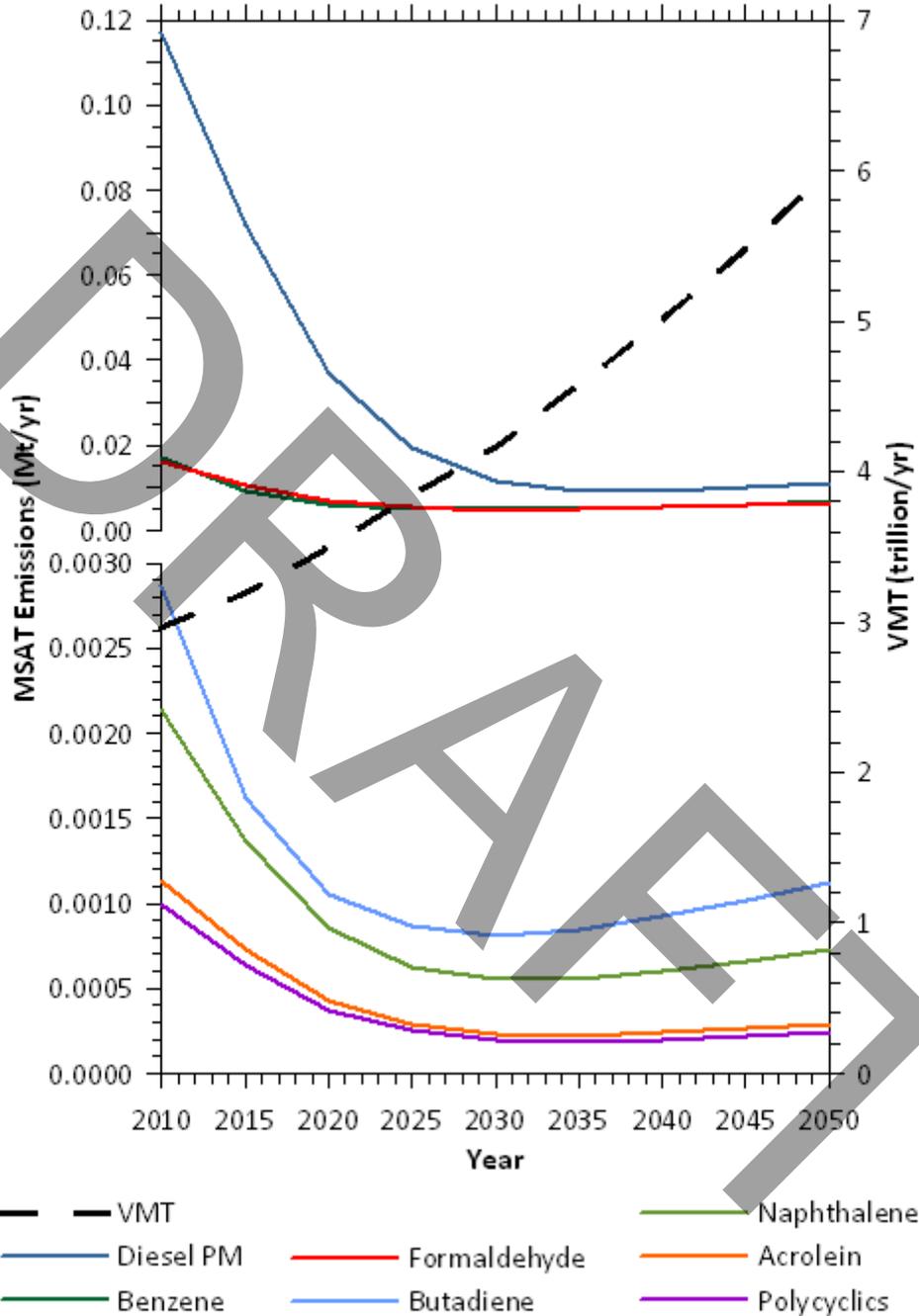
The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Based on an FHWA analysis using EPA's MOVES2010b model, as shown in Figure 1, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the National Environmental Policy Act (NEPA). The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

PROJECT-LEVEL MSAT DISCUSSION

Following FHWA's Interim Guidance Update on MSAT Analysis in NEPA dated December 6, 2012, (http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm), this project has been determined to have low potential MSAT effects, thereby requiring a qualitative MSAT analysis. A qualitative MSAT analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.

**Figure 1: NATIONAL MSAT EMISSION TRENDS 1999 - 2050
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA's MOVES2010b MODEL**



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors
Source: EPA MOVES2010b model runs conducted during May - June 2012 by FHWA.

For each alternative, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives may be slightly higher than that for the No-Build Alternative, because the additional capacity may increase the efficiency of the roadway and attract rerouted trips from elsewhere in the transportation network. This potential increase in VMT could lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase would be offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases.

There may also be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives may have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No-Build Alternative. However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

INCOMPLETE OR UNAVAILABLE INFORMATION FOR PROJECT-SPECIFIC MSAT HEALTH IMPACTS ANALYSIS

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <https://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and

quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, <http://pubs.healtheffects.org/view.php?id=282>) or in the future as vehicle emissions substantially decrease (HEI, <http://pubs.healtheffects.org/view.php?id=306>).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (<http://pubs.healtheffects.org/view.php?id=282>). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (<http://www.epa.gov/risk/basicinformation.htm#g>) and the HEI (<http://pubs.healtheffects.org/getfile.php?u=395>) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

CONCLUSION

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project at this time. While it is possible that localized increases in MSAT emissions may occur as a result of this project, emissions will likely be lower than present levels in the design year of this project as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Although local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

APPENDIX B

2017 Preliminary Noise Analysis Final Technical Report

DRAFT

Preliminary Noise Analysis Final Technical Report

Rolling Road (Route 638) Widen to Four Lanes

**From: 0.353 miles North of Fairfax County Parkway
(Route 7100)**

To: Old Keene Mill Road (Route 644)

UPC 5559

Project Number: 0638-029-156, C-504, P-104, R-204

HMMH Report No. 306780.010
November 2017

Prepared for:
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DRAFT

EXECUTIVE SUMMARY

This report describes the details of a noise impact assessment and preliminary noise abatement evaluation performed for the Rolling Road (Route 638) Widening project in Fairfax County, 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 July 14, 2015.

The Rolling Road Widening Project proposes to widen Rolling Road (Route 638) from two lanes to four lanes between Viola Street and Old Keene Mill Road (Route 644) with added pedestrian and bicycle facilities. The project corridor is approximately 1.4 miles in length and upon completion will decrease congestion, increase capacity, improve safety, and expand mobility for pedestrians and cyclists. On-street parking will be maintained in areas where driveways have direct access to Rolling Road. It is anticipated that right-of-way acquisitions and utility relocation will be required to complete the project.

The study involved monitoring of existing noise conditions and modeling of existing (2016) and design year (2040) noise conditions in the study area with the FHWA-approved computerized Traffic Noise Model. Modeling accounted for the existing terrain and buildings, and for existing and proposed roadways with projected loudest-hour traffic. Noise impact was assessed for the 2040 Build alternative and is summarized by FHWA land use activity category in the table below. Traffic noise projections are preliminary and will be reevaluated during the final design noise analysis.

The proposed Project is not related to the interstate system, nor does it result in a “constructive use” of a Section 4(f) property. Consequently, this preliminary noise study does not include an analysis of traffic noise levels for the design year No-build (2040) alternative, consistent with VDOT’s State Noise Abatement Policy.

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
Existing	NAC	50	2	0	0	52
Build	NAC	119	2	0	0	121

Source: HMMH, 2017

Notes:

1.) The FHWA Activity Category is shown in parenthesis.

Noise abatement must be considered where noise impact is predicted to occur with the 2040 Build alternative. Noise abatement is evaluated to determine if it is warranted, feasible and reasonable. The following table summarizes the total length, estimated cost and benefits that would be provided by the potential noise barriers evaluated that were evaluated in this study.

Noise abatement was found to be not feasible at several locations along the project corridor where existing driveway access to Rolling Road is to be maintained in the design year.

Summary of Potential Noise Barriers

Barrier ID	Number of Impacted Receptors	Impacted & Benefited Receptors	Non-Impacted & Benefited Receptors	Noise Barrier Parameters				Surface Area/Benefited Receptor (SF/BR) ¹	Barrier Status ²
				Length (feet)	Height (feet)	Surface Area (sq feet)	Cost at \$42/sq ft		
A	2	0	0	108	20	2,158	\$90,636	NA	NF
C1	1	1	2	313	12	3,756	\$157,752	1,252	F & R
C2	12	12	7	1,458	12	17,563	\$737,646	924	F & R
D	3	3	10	374	12	4,491	\$188,622	345	F & R
F	2	2	3	504	12	6,042	\$253,764	1,208	F & R
G	7	4	1	534	12	6,404	\$268,968	1,281	F & R
H	9	9	1	1,014	12	12,170	\$511,140	1,217	F & R
J	10	10	0	1,014	12	12,197	\$512,274	1,220	F & R
N	9	9	10	912	12	10,945	\$459,690	576	F & R
O	10	10	2	874	12	10,472	\$439,824	873	F & R
TOTAL	63	60	36	6,997	-	84,040	\$3,529,680	-	F & R

Source: HMMH, 2017

Notes:

- 1.) Where SF/BR exceeds VDOT's maximum of 1600, a noise barrier would not be considered cost-reasonable.
- 2.) Barrier Status: F & R = Feasible and Reasonable; F & NR = Feasible and Not Reasonable; NF = Not Feasible.

This report presents the results of a preliminary noise evaluation; a more detailed review will be completed during the final design of the Project. As such, noise barriers that are found to be feasible and reasonable during the preliminary noise analysis may not be found to be feasible and reasonable during the final design noise analysis. Conversely, noise barriers that were not considered feasible and reasonable may meet the established criteria and be recommended for construction.

Construction activity may cause intermittent fluctuations in noise levels. During the construction phase of the project, all reasonable measures will be taken to minimize noise impact from these activities.

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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 ramps in an interchange. The methods and procedures used in this preliminary noise impact evaluation are consistent with the latest noise assessment policies issued by FHWA and the Virginia Department of Transportation (VDOT); VDOT’s Highway Traffic Noise Impact Analysis Guidance Manual was updated most recently on July 14, 2015.

This report presents a summary of the roadway improvements under study, description of noise terminology, the applicable standards and criteria, an evaluation of the existing noise conditions, a description of the computations of existing and future noise levels, a prediction of future noise impact, an evaluation of potential noise abatement measures, construction noise considerations, and information for local government officials. Appendix A presents the list of preparers, Appendix B tabulates the traffic data used in the noise modeling, Appendix C presents predicted noise levels, Appendix D presents all noise measurement data, Appendix E provides a response from the VDOT project management on alternative noise abatement measures, and Appendix F presents VDOT’s Warranted, Feasible and Reasonable barrier worksheets.

1.2 Project Description

The Rolling Road Widening Project proposes to widen Rolling Road (Route 638) from two lanes to four lanes between Viola Street and Old Keene Mill Road (Route 644) with added pedestrian and bicycle facilities. The project corridor is approximately 1.4 miles in length and upon completion will decrease congestion, increase capacity, improve safety, and expand mobility for pedestrians and cyclists. On-street parking will be maintained in areas where driveways have direct access to Rolling Road. It is anticipated that right-of-way acquisitions and utility relocation will be required to complete the project.

1.3 Study Area Description and Land Use

Noise sensitive land uses in the project study area include single-family residences along both sides of Rolling Road, townhomes in Rhygate and Kenwood Townes, the Rolling Valley Elementary School, and the Springfield Golf & Country Club. 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 cross-streets. The modeled receptors for the Project were grouped into the following CNEs:

- CNE A is located near the northern project limit, on the west side of Rolling Road, between Old Keene Mill Road and Kenwood Avenue, and consists of residential land use – specifically the townhomes in the Kenwood Townes development.

- CNE B is located near the northern project limit, on the east side of Rolling Road. It is comprised of recreational land use at the Springfield Golf & Country Club, including tennis courts and the swimming pool.
- CNE C is located on the west side of Rolling Road from Kenwood Avenue to Greeley Boulevard and is comprised of single-family homes.
- CNE D is located on the east side of Rolling Road and is comprised of the townhomes in the Rhygate development, i.e. townhomes on Taunton Place, Wainfleet Court, and Eastleigh Court.
- CNE E is located on the east side of Rolling Road and includes townhomes in Rhygate, south of Taunton Place, and the golf course at the Springfield Golf & Country Club.
- CNE F is located on the east side of Rolling Road from Marcy Avenue to Greeley Boulevard and is comprised of single-family homes.
- CNE G is located on the west side of Rolling Road from Greeley Boulevard to Barnack Drive and is comprised of single-family homes. Three single-family homes on Rolling Road, just north of the intersection with Barnack Drive, have existing and future driveway access on to Rolling Road.
- CNE H is located on the east side of Rolling Road from Greeley Boulevard to Taft Drive and is comprised of single-family homes.
- CNE I is located on the west side of Rolling Road between Barnack Drive and Birmingham Lane and includes a mix of residential, recreational, and institutional land use. CNE I is comprised of single-family homes and the Rolling Valley Elementary School. All of the first row homes in this CNE have existing and future driveway access onto Rolling Road.
- CNE J is located on the east side of Rolling Road from Taft Drive to Bellamy Avenue and is comprised of residential land use.
- CNE K is located on the west side of Rolling Road between Birmingham Lane and Springfield Village Drive and is comprised of residential land use. All of the first row homes in this CNE have existing and future driveway access onto Rolling Road.
- CNE L is located on the east side of Rolling Road from Bellamy Avenue to Viola Street and is comprised of single-family homes. All of the first row homes in CNE L have existing and future driveway access onto Rolling Road.
- CNE M is located on the west side of Rolling Road between Springfield Village Drive and Viola Drive and is comprised of residential land use. All of the first row homes in CNE M have existing and future driveway access onto Rolling Road.
- CNE N is located on the west side of Rolling Road between Viola Drive and Tanworth Drive. Noise-sensitive land use in CNE N is comprised of single-family homes a row of townhomes on Tanworth Drive.
- CNE O is located near the southern project limit, along the east side of Rolling Road between Viola Street and Petunia Street. It is comprised of single-family homes.

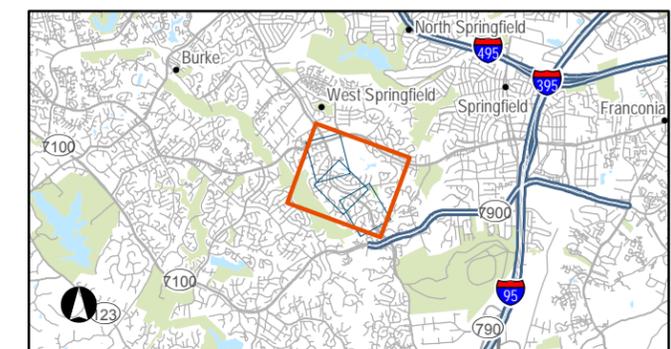
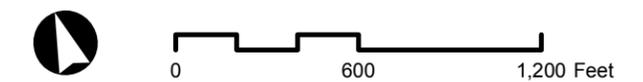
Figure 1 provides an overview of the study area that shows the locations of the CNEs and the noise monitoring locations, which are discussed in detail in Section 3.1

Figure 1
Study Area and
Measurement Location Map

Rolling Road (Route 638)
Widening Project,
Fairfax County, Virginia

VDOT Project No. 0638-029-156, C-504, P-104, R-204;
 UPC No. 5559

- M# Measurement Site
- CNE Boundary
- 500' Noise Study Area



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2 NOISE ABATEMENT CRITERIA AND DESIGN GOALS

2.1 Regulations and Guidelines

The potential noise impact of the Rolling Road (Route 638) Widening 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. 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. 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 last updated on July 14, 2015.

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 commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response to noise because the sensitivity of human hearing varies with frequency. The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental 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 $L_{eq}(h)$.

In this study, residential areas (Activity Category B), recreational areas (Activity Category C), and institutional interior spaces (Activity Category D) were evaluated for noise impact. 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. For Category D, noise impact would occur where predicted interior sound levels due to the project approach or exceed 52 dBA $L_{eq}(h)$. 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 ²	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.

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 in existing noise, consideration of traffic noise reduction measures is necessary. If it is found that such mitigation measures will cause adverse social, economic or environmental effects that outweigh the benefits received, they may be dismissed from consideration. For this study, noise levels throughout the study area were determined for Existing (2016) conditions and 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. The prediction methods and predicted noise levels appear in Section 4.

3 EXISTING NOISE CONDITIONS

This section of the report describes the noise monitoring program and the investigation of undeveloped lands and permitted developments.

3.1 Monitoring of Existing Noise Levels

A noise monitoring program was conducted along the Rolling Road Project corridor, consistent with FHWA and VDOT recommended procedures to document existing ambient noise levels in noise-sensitive locations in the study corridor, and to provide a means for validation of the TNM noise prediction model.

Noise monitoring was conducted at five short-term (30 minutes in duration) sites on September 26, 2016. Measurement sites were generally located in areas with the highest noise exposures, adjacent to first-row properties. Traffic classification counts on the roadways nearest each measurement site were conducted simultaneously with each noise measurement. The short-term measurements characterized existing noise levels in the study area but were not necessarily conducted during the loudest hour of the day. They included contributions from sources other than traffic, such as aircraft. Figure 1 shows the locations of the noise measurement sites within the project study area. The short-term noise monitoring locations are shown in the study area graphic, and numbered with the prefix “M.”

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 Common Noise Environment (CNE) to validate the computer noise model.

Short-term noise measurements were conducted using an HMMH-owned Larson-Davis 820 (ANSI Type I, “Precision”) integrating sound level meter. HMMH’s noise measurement instruments are calibrated annually at a certification laboratory, with calibrations traceable to the National Institute of Standards and Technology. During the monitoring program, the sound level meters were calibrated in the field using a handheld acoustic calibrator at the beginning and end of each measurement period.

The short-term data collection procedure involved measurement of one-second equivalent sound levels (L_{eq} s) over a period of 30 minutes. Continuous logging of events was conducted during the monitoring, so that intervals that included events not representative of the ambient noise environment or not traffic-related could be excluded later. For each 30-minute period, a “Total L_{eq} ” (includes non-contaminated sound level contributions from every 1-second interval) and a “Traffic-only L_{eq} ” (excludes those intervals that contained noise events unrelated to roadway noise) were determined. By comparing the two totals, the significance of non-traffic events (such as aircraft operations) to the overall noise level can be determined for the measurement period.

The measured noise levels appear in Table 2 as equivalent sound levels (L_{eq}). As described above, the L_{eq} is a sound-energy average of the fluctuating sound level (in A-weighted decibels, dBA) measured over a specified period of time. Table 2 provides the site address, as well as the date, start time, and duration of each measurement. Measured noise levels are presented both in terms of the “Total L_{eq} ” and the “Traffic-only L_{eq} ”.

As shown in Table 2, the Total L_{eq} ranged from a low of 58 dBA at 8351 Regal Oak Court (Site ST5) to a high of 73 dBA at 6817 Rolling Road (Site ST3). Except for Sites ST2 and ST3, values of the Traffic-only L_{eq} were very similar to the measured Total L_{eq} s at each measurement site, which is an indication that roadway traffic was the dominant source of noise in spite of the presence of other sporadic and occasional noise events due to human-related activity.

Other sources of noise in the existing environment included, but were not limited to aircraft overflights, sirens, biogenic sounds (birds and dogs), car horns, and other human-related activity. Appendix D provides details of the data acquired during the noise measurement program, including noise monitor output, site sketches, photographs, noise level data with site summary results, and traffic counts with hourly totals. The locations of the measurement sites are shown on the overview map in Figure 1.

Table 2 Short-term Noise Monitoring Summary

Site No.	Address/Location	Date	Time Start (hh:mm:ss)	Duration (minutes)	Monitored Total L_{eq} (dBA)	Monitored Traffic-Only L_{eq} (dBA)
M1	8009 Viola Street	26-Sep-16	10:10:02	30	65	65
M2	6282 Rolling Road	26-Sep-16	13:56:00	30	67	62
M3	6817 Rolling Road	26-Sep-16	15:49:00	30	73	64
M4	8300 Greely Boulevard	26-Sep-16	16:53:00	30	65	65
M5	8351 Regal Oak Court	26-Sep-16	11:32:00	30	58	58

Source: HMMH, 2016

3.2 Predicted Existing Noise Levels

For calculation of loudest-hour noise levels throughout the study area, many additional receiver locations were added to the measurement sites in the TNM to provide a comprehensive basis of comparison for the analysis of noise impacts from the existing and future project conditions. Using the appropriate loudest-hour traffic data, existing and future traffic noise levels were predicted for the measurement sites and the additional receiver locations. The computation methods and predicted noise levels are presented in the next section of this report.

The noise measurements provided valuable information on current noise conditions and the effects of terrain and shielding on sound propagation from the roadway to the nearby residential land uses. However, because existing noise levels are not always measured during the loudest hour of the day, estimates of the loudest-hour existing noise levels were computed with an FHWA-approved noise prediction model using the appropriate traffic data as input. These predicted estimates of existing noise levels for the loudest hour of the day are then used as the baseline against which probable future noise levels are compared and potential noise impacts assessed. Additional information on the computation methods and computed levels used in this study are provided in Section 4.

3.3 Undeveloped Lands and Permitted Developments

Highway traffic noise analyses are (and will be) performed for developed lands as well as undeveloped lands if they are considered “permitted.” Undeveloped lands are deemed to be

permitted when there is a definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of at least one building permit.

In accordance with the VDOT Traffic Noise Policy, an undeveloped lot is considered to be planned, designed, and programmed if a building permit has been issued by the local authorities prior to the Date of Public Knowledge for the relevant project. VDOT considers the “Date of Public Knowledge” as the date that the final National Environmental Protection Act (NEPA) approval is made. VDOT has no obligation to provide noise mitigation for any undeveloped land that is permitted or constructed after this date.

The Project corridor is “built-out;” that is, there are no undeveloped parcels along the entire length of the corridor.

DRAFT

4 TRAFFIC NOISE PREDICTION

This section discusses the noise prediction model, the model validation process, traffic data used as input to the noise prediction model, and then presents a summary of the predicted noise levels.

4.1 Noise Prediction Model

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 develop the preliminary heights, lengths and locations for all potential noise barriers along the project corridor. TNM runs were developed from MicroStation roadway design and existing terrain contour files that were supplied by VDOT and aerial imagery from ESRI ArcMap. The noise model developed for the Project considered the existing and improved Rolling Road, Fairfax County Parkway (Route 286) and an associated on-ramp, Franconia-Springfield Parkway (Route 289) and an associated off-ramp, as well as Old Keene Mill Road (Route 644). The noise model also included a number of “dummy” lanes (roadways without traffic) to represent paved shoulders, turning lanes, and side streets. 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.”

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 runs. The study area includes exterior residential (Category B), exterior recreational (Category C) and interior institutional (Category D) land uses adjacent to project roadways. All TNM runs are provided upon request in native electronic form.

4.2 Noise Model Validation

According to FHWA and VDOT policies, the accuracy of the noise prediction model must be verified on a project-by-project basis. The noise model validation process compares existing noise levels monitored in the field with predicted noise levels from the FHWA TNM using the traffic conditions during the monitoring period as input to the model. The purpose of the noise model validation 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 predicted noise levels at each measurement site. Individual site to site differences may vary significantly, depending on factors that may affect either the measured noise level or the predicted noise level at a given site. Examples of factors that affect noise levels are provided below:

- Factors affecting measured noise levels include: atmospheric conditions (upwind, neutral or downwind conditions), shielding by structures that are difficult to model, and/or the presence of “loud” vehicle pass-bys during the measurement.
- Factors affecting predicted noise levels include: the level of detail in modeling terrain features and locating receptors, as well as the degree to which ground zones, tree zones, and sparse rows of buildings are incorporated into the model.

FHWA and VDOT consider the noise model to be validated when measured noise levels are within +/- 3 dBA of predicted noise levels for existing conditions.

FHWA discourages the “calibration” of a noise model through the use of adjustment factors within the noise model to match measured and predicted levels. FHWA recognizes that many factors are present both in the measurement of noise and in the development of a model that can lead to variability. Differences between measured and predicted levels that are outside the accepted accuracy of the model are likely due to unusual circumstances during the measurements, or to insufficient detail or inaccurate assumptions in the model. Only after a thorough examination of the measurement conditions and the modeling assumptions has been completed, should the highway noise analyst consider the use of adjustment factors in the model. FHWA recognizes that in some cases, it may not be possible to identify a specific reason for not validating a specific measurement site. Any such cases are to be documented in the noise study report.

Table 3 presents a site-by-site comparison of measured noise levels and the corresponding TNM-computed noise levels. At four out of five sites, the differences between measured and predicted noise levels fall within three decibels, which is the accepted level of accuracy in the noise model. The Project-wide average difference between calculated noise levels and monitored noise levels was -2.3 decibels (over all five sites), which generally shows excellent agreement between monitored and modeled sound levels, and suggests confidence in the modeling assumptions.

Table 3 Computed vs. Measured Sound Levels at Measurement Sites

Site No.	CNE(s)	Address / Location / Land Use	Monitored Leq (dBA)*	TNM-Computed Leq (dBA)	Difference (dB) (computed minus monitored)
M1	L, O	8009 Viola Street	65.4	62.8	-2.6
M2	K	6282 Rolling Road	61.5	58.7	-2.8
M3	J	6817 Rolling Road	63.9	62.5	-1.4
M4	C, G	8300 Greely Boulevard	65.1	61.8	-3.3
M5	A, C	8351 Regal Oak Court	57.8	56.6	-1.2
Average difference:					-2.3
Standard deviation of difference:					0.9

* Monitored traffic-only sound level

Source: HMMH, 2016

The validation results at Site M4 were slightly outside the normally acceptable range. As shown in Table 3, the difference between the TNM-computed noise level and the monitored level was -3.3 decibels, suggesting that TNM is slightly under predicting at this location. As shown in the photograph for Site M4 in Appendix D, the microphone was located in very close proximity to a very wide section of sidewalk that was paved. This section of hard ground was not included in the TNM model for Site M4 and is the likely cause for the discrepancy between measured and monitored levels at this site.

Appendix D provides the normalized traffic count data that were collected simultaneously with the noise monitoring data and subsequently used as input to the FHWA TNM for model validation.

4.3 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. Traffic data were supplied

by VDOT for the design year of 2040 for Rolling Road and other major arterials (Fairfax County Parkway, Franconia-Springfield Parkway, and Old Keene Mill Road), and were presented 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 of 90 feet from Rolling Road for each hour of the day. The TNM run of the complete study area was then used with all receptors to refine the selection of the loudest hour for each scenario (the Existing and design-year Build alternative) between the two hours that produced the highest noise level for each direction of travel. For all receptors, the loudest hour of the day was found to be the hour starting at 5:00 PM. Appendix C provides the loudest-hour traffic data for the roadways used in the TNM for this project.

4.4 Presentation of Results

The study area includes exterior residential (Category B), exterior recreational (Category C) and interior institutional (Category D) land uses.

Table 4 summarizes the range of predicted noise levels by CNE. The table includes a description of each CNE and its land use, the FHWA Activity Category, and the loudest-hour traffic noise levels, which are presented in terms of the A-weighted equivalent sound level, or L_{eq} , in dBA. Loudest-hour noise levels were computed for 2016 Existing conditions, as well as the design-year (2040) Build alternative. Appendix D provides tables that list the computed sound levels at all of the modeled receptors included in the noise assessment.

The proposed Project is not related to the interstate system, nor does it result in a “constructive use” of a Section 4(f) property. Consequently, this preliminary noise study does not include an analysis of traffic noise levels for the design year (2040) No-build alternative, consistent with VDOT’s State Noise Abatement Policy.

Table 4 Ranges of Predicted Exterior & Interior Noise Levels for the Worst Hour

CNE	Land Use – Description	Range of Predicted Exterior & Interior Noise Levels for the Worst Hour (dBA)		
		Activity Category	2016 Existing	2040 Build
A	Residential – west side between Old Keene Mill Rd and Kenwood Ave	B	45 - 66	47 - 67
B	Recreational – tennis courts and swimming pool at Springfield Golf & Country Club	C	52 - 55	55 - 60
C	Residential – west side between Kenwood Ave and Greeley Blvd	B	45 - 66	47 - 67
D	Residential – east side, townhomes at Rhygate (Taunton Pl, Wainfleet Ct, Eastleigh Ct)	B	46 - 63	48 - 67
E	Recreational & Residential – Springfield Golf Club and townhomes at Rhygate (Taunton Pl)	B and C	50 - 56	54 - 60
F	Residential – east side, Marcy Ave and Greeley Blvd	B	47 - 63	50 - 67
G	Residential – west side between Greeley Blvd and Barnack Dr	B	42 - 67	43 - 67
H	Residential – east side between Greeley Blvd and Taft Dr	B	46 - 63	48 - 68
I	Residential, Recreational & Institutional – west side between Barnack Dr and Birmingham Ln, Rolling Valley ES	B, C and D	26 - 68	28 - 67
J	Residential – east side between Taft Dr and Bellamy Ave	B	44 - 65	46 - 69
K	Residential – west side between Birmingham Ln and Springfield Village Dr	B	46 - 67	49 - 68
L	Residential – east side between Bellamy Ave and Viola St	B	40 - 66	41 - 69
M	Residential – west side between Springfield Village Dr and Viola Dr	B	47 - 67	49 - 68
N	Residential – west side between Viola Dr and Tanworth Dr	B	48 - 66	50 - 68
O	Residential – east side between Viola St and Petunia St	B	47 - 66	49 - 68

Figure 2 provides a location map for the CNEs, noise-sensitive receptors, the location of the 66 dBA L_{eq} “contour” for the 2040 Build alternative, and the locations of potential noise barriers. Each receptor is shown in Figure 2 with a color-coded dot that indicates the status of each receptor according to its 2040 Build noise level, both 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 or more 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); and
- Yellow - not impacted (without noise barrier) or benefited (with noise barrier);

5 NOISE IMPACT ASSESSMENT

The potential noise impact of the Rolling Road Widening Project was assessed according to FHWA and VDOT noise assessment guidelines, described in detail in Section 2. In summary, noise impact would occur wherever Project noise levels are expected to approach within one decibel or exceed 67 dBA L_{eq} at noise-sensitive land uses in Activity Categories B (exterior residential) and C (exterior recreational), and approach within one decibel or exceed 52 dBA L_{eq} at noise-sensitive land uses in Activity Category D (interior) during the loudest hour of the day. Noise impact also would occur wherever Project noise levels cause a substantial increase over existing noise levels—an increase of 10 dB or more is considered substantial by VDOT. However, there are no impacts predicted due to substantial increases in existing noise levels for the Rolling Road project.

Table 6 presents a summary of the predicted noise impact for the 2016 Existing and 2040 Build alternative. The impacts are summarized for the entire study area, separately by NAC Activity Category. All of the potential noise impact is due to Project noise levels that are predicted to approach or exceed the relevant NAC. No impacts due to a substantial increase in existing noise levels were identified for this study.

Table 5 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
Existing	NAC	50	2	0	0	52
Build	NAC	119	2	0	0	121

Source: HMMH, 2016

Notes:

1.) The FHWA Activity Category is shown in parenthesis.

Table 6 presents a summary of the predicted noise impact for the 2016 Existing and 2040 Build alternative by CNE.

The proposed Project is not related to the interstate system, nor does it result in a “constructive use” of a Section 4(f) property. Consequently, this preliminary noise study does not include an analysis of traffic noise levels for the design year No-build (2040) alternative, consistent with VDOT’s State Noise Abatement Policy.

Table 6 Predicted Traffic Noise Impact by Common Noise Environment (CNE)

CNE	Land Use – Description	Number of Impacted Dwellings, Recreational Units, and Institutions Impacted Traffic Noise		
		Activity Category	2016 Existing	2040 Build
A	Residential – west side between Old Keene Mill Rd and Kenwood Ave	B	1	3
B	Recreational – tennis courts and swimming pool at Springfield Golf & Country Club	C	0	0
C	Residential – west side between Kenwood Ave and Greeley Blvd	B	1	13
D	Residential – east side, townhomes at Rhygate (Taunton Pl, Wainfleet Ct, Eastleigh Ct)	B	0	3
E	Recreational & Residential – Springfield Golf Club and townhomes at Rhygate (Taunton Pl)	B and C	0	0
F	Residential – east side, Marcy Ave and Greeley Blvd	B	0	2
G	Residential – west side between Greeley Blvd and Barnack Dr	B	3	7
H	Residential – east side between Greeley Blvd and Taft Dr	B	0	9
I	Residential, Recreational & Institutional – west side between Barnack Dr and Birmingham Ln, Rolling Valley ES	B, C and D	15	17
J	Residential – east side between Taft Dr and Bellamy Ave	B	0	16
K	Residential – west side between Birmingham Ln and Springfield Village Dr	B	9	12
L	Residential – east side between Bellamy Ave and Viola St	B	8	14
M	Residential – west side between Springfield Village Dr and Viola Dr	B	6	6
N	Residential – west side between Viola Dr and Tanworth Dr	B	8	9
O	Residential – east side between Viola St and Petunia St	B	1	10
TOTALS			52	121

Figure 2 shows the locations of individual receptors where noise impacts are predicted to occur with the 2040 Build Alternative. Figure 2 also includes a noise impact contour for the Build Alternative without abatement in the residential and recreational areas (at the applicable Categories B and C NAC of 67 dBA, which is represented by 66 dBA L_{eq} for ground-floor receptors).

6 NOISE ABATEMENT MEASURES

FHWA and VDOT policies require that noise abatement be considered for all receptors that are predicted to be impacted by traffic noise from the proposed project. 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.

One receptor in the Kenwood Apartments adjacent to Old Keene Mill Road in CNE A (No. A-001) is predicted to be impacted by noise from traffic on Old Keene Mill Road. This roadway is not proposed to be improved as part of the project. Therefore, since there is no predicted noise impact from the project at this receptor, noise abatement is not considered. Section 10.1 of the VDOT Highway Traffic Noise Manual addresses this circumstance.

6.1 Alternative Noise Abatement Measures

VDOT guidelines recommend a variety of mitigation measures that should be considered in response to transportation-related noise impacts. While noise barriers and/or earth berms are generally the most effective form of noise mitigation, additional mitigation measures exist that have the potential to provide considerable noise reductions under certain circumstances. Mitigation measures considered for this project include:

- Traffic management measures,
- Alteration of horizontal and vertical alignments,
- Acoustical insulation of public-use and non-profit facilities,
- Acquisition of buffer land,
- Construction of earth berms,
- Construction of noise barriers.

6.1.1 Traffic Management 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 alone since a substantial decrease in speed is necessary to provide a significant noise reduction. Typically, a 10 mph reduction in speed will result in only a 2 dBA decrease in noise level, which is not considered a sufficient level of attenuation to be considered feasible. Further, a 2 dBA change in noise level is not considered to be generally perceptible. Restricting truck usage on Rolling Road is not practical since one purpose of this facility is to accommodate trucks.

6.1.2 Alteration of Horizontal and Vertical Alignments

A significant alteration of the horizontal alignment of Rolling Road would be necessary to make such a measure effective in reducing noise, since a doubling of distance to the highway is usually needed to effect a 5-decibel reduction. However, such shifts would have undesirable consequences, right-of-way acquisitions and relocations would be required. Also, shifting the horizontal alignment is not practical since there are impacted receptors on both sides of the corridor throughout the study area. Shifting the alignment away from receptors on one side of the road would bring it closer to receptors on the other side of the road. Further alteration of the vertical alignment would not be

feasible since the project involves relatively minor modifications to an existing facility. Raising or lowering the Rolling Road vertical alignment would result in significant environmental impacts to the surrounding environment and costly engineering challenges.

6.1.3 Acoustical Insulation

Acoustical Insulation of public-use and non-profit facilities applies only to public and institutional use buildings. Since no public use or institutional structures are anticipated to have interior noise levels exceeding FHWA's interior NAC, this noise abatement option will not be applied.

6.1.4 Acquisition of Buffer Land

The purchase of property for the creation of a "buffer zone" to reduce noise impacts is only considered for predominantly unimproved properties because the amount of property required for this option to be effective would create significant additional impacts (e.g., in terms of residential displacements), which were determined to outweigh the benefits of land acquisition.

6.1.5 Construction of Earth Berms

Berms are considered a more attractive alternative to noise walls where there is sufficient land and fill available for them. However, berms do not appear feasible for the Rolling Road project corridor because they would greatly increase the cost and the footprint of the project by substantially increasing the amount of right of way required to accommodate the berms. Since all of the study corridor is densely developed, many costly and disruptive residential displacements necessarily would result from acquiring the needed right of way.

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 would be given to these measures during the final design stage, where feasible. The response to this requirement from project management is included Appendix E.

6.2 Noise Barriers

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 in the Build condition. 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.

To be constructed, any noise barriers identified in this document must satisfy VDOT's feasibility and reasonableness criteria. Therefore, the noise barrier design parameters and cost identified in this document are preliminary and should not be considered final. A final decision on the feasibility and reasonableness of noise barriers would be made during the noise barrier analysis conducted during the final design phase of the project after the project design is developed and traffic is updated. Also, the need for an analysis of reflected sound and the potential use of sound absorbing materials will be evaluated during this final design analysis. If a noise barrier is determined to be feasible and

reasonable, the affected public would be given an opportunity to decide whether they are in favor of construction of the noise barrier. VDOT's formal policies for involving the public in noise abatement decisions are described in their Guidance Manual, in section 7.3.10.1 *Viewpoints of the benefited receptors*, section 12.3 *Affected Receptors/Community*, and section 12.4 *Voting Procedures*.

6.2.1 Feasibility and Reasonableness

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 1600 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, 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 would be surveyed during the final design phase of this roadway improvement project.

6.2.2 Barriers Found Not Feasible

As shown in Table 6, traffic noise impacts were predicted to occur with the 2040 Build alternative at eight residences in CNE I, 12 residence in CNE K, 13 residences in CNE L, and six residences in CNE M. Each of these impacted residences has existing driveway access onto Rolling Road that will be maintained with the Build alternative. Noise barriers are not feasible for these residential receptors since driveway access must be maintained.

6.2.3 Summary of Potential Noise Barriers

Details of each of the evaluated barriers are given in Table 7 and described in narratives following the table. Each of the barriers is also shown in Figure 2 as a solid line. The color of the line indicates whether it would be reasonable and feasible (red) or not feasible (dark blue). Feasible barriers for all CNEs are discussed in the paragraphs below and their characteristics are shown in Table 7 and in Figure 2. Appendix F presents the preliminary Warranted, Feasible and Reasonable Worksheets for

Table 7 Summary of Potential Noise Barriers

Barrier ID	Noise Barrier Parameters						Number of Receptors				Surface Area/ Benefited Receptor (SF/BR) ¹	Barrier Status ²
	Noise Reduction (dBA)		Length (feet)	Height (feet)	Surface Area (sq feet)	Cost at \$42/sq ft	Impacted	Impacted & Benefited	Not Impacted & Benefited	Total Benefited		
	Range	Average										
A	< 5	< 5	108	20	2,158	\$90,636	2	0	0	0	NA	NF
C1	6 to 9	8.2	313	12	3,756	\$157,752	1	1	2	3	1,252	F & R
C2	5 to 14	9.3	1,458	12	17,563	\$737,646	12	12	7	19	924	F & R
D	6 to 12	8.8	374	12	4,491	\$188,622	3	3	10	13	345	F & R
F	6 to 12	8.4	504	12	6,042	\$253,764	2	2	3	5	1,208	F & R
G	10 to 13	11.8	534	12	6,404	\$268,968	7	4	1	5	1,281	F & R
H	8 to 13	11.1	1,014	12	12,170	\$511,140	9	9	1	10	1,217	F & R
J	10 to 13	11.9	1,014	12	12,197	\$512,274	10	10	0	10	1,220	F & R
N	5 to 13	8.5	912	12	10,945	\$459,690	9	9	10	19	576	F & R
O	5 to 11	7.4	874	12	10,472	\$439,824	10	10	2	12	873	F & R
TOTAL	-	-	6,997	-	84,040	\$3,529,680	63	60	36	96	-	F & R

Source: HMMH, 2017

Notes:

- 1.) Where SF/BR exceeds VDOT's maximum of 1600, a noise barrier would not be considered cost-reasonable.
- 2.) Barrier Status: F & R = Feasible and Reasonable; F & NR = Feasible and Not Reasonable; NF = Not Feasible.

all barriers. The table of predicted sound levels for all receivers in Appendix C includes the computed noise levels with the evaluated barriers and the computed barrier insertion loss values. Whether each receiver is below the point of intersection is also indicated in the table. The potential noise barriers summarized in Table 7 and shown in the graphics of Figure 2 have not been intentionally placed outside of VDOT right of way. While the need for additional right-of-way to construct some barriers for this project is not anticipated, it also cannot be precluded in the future, given the limited information available for this preliminary analysis.

Barrier A was evaluated for a set of townhomes in the east end of CNE A, located along the southbound side of Rolling Road between Old Keene Mill Road and Regal Oak Court. The barrier is shown in Figure 2. Due to parking lot and road entry ways, the length of this barrier is limited to 108 feet. At a height of 20 feet, and with a surface area of 2,158 square feet, this barrier is only able to provide 2 to 4 decibels of noise reduction to the area's two impacted receptors, and smaller amounts of noise reduction to all other receptors. As five decibels constitutes the minimum amount of noise reduction considered as a benefit, this barrier provides no benefits, making it not feasible.

Barrier C1 is a potential noise barrier for the residences in CNE C between Kenwood Avenue and Rivington Road, as shown in Figure 2. The barrier would benefit the single impacted receptor in CNE C north of Rivington Road, with 9 decibels of noise reduction, as well as two additional non-impacted residential receptors. Barrier C1 would be 12 feet high and 313 feet long, with a surface area of 3,756 square feet. The potential barrier is feasible and reasonable, since it provides more than 7 decibels of noise reduction and has a square-foot per benefited receptor value of 1,252.

Barrier C2 is a potential noise barrier for the residences in CNE C between Rivington Road and Greeley Boulevard, as shown in Figure 2. The barrier would be 12 feet high and 1,458 long, with a surface area of 17,563 square feet. Barrier C2 is feasible because it benefits all twelve of the impacted receptors in CNE C south of Rivington Road, as well as seven additional non-impacted receptors. Barrier C2 is also reasonable, since it meets the 7-decibel noise reduction design goal at all of the impacted receptors, and has a surface area per benefited receptor of 924, well below the VDOT maximum of 1,600.

Barrier D is a potential noise barrier for the residences in CNE D, which consist of townhomes on the northbound side of Rolling Road, along Taunton Place, Wainfleet Court, and Eastleigh Court in Rhygate. The barrier, shown in Figure 2, would benefit all three of the impacted receptors with 6 to 12 decibels of noise reduction, as well as ten additional non-impacted receptors. The barrier would be 12 feet high, 374 feet long, and have a surface area of 4,491 square feet. The barrier would be feasible because it benefits all impacted receptors, and reasonable because it meets the 7-decibel noise reduction design goal at three impacted receptors, and has a surface area per benefited receptor of 374. It should also be noted that analysis predicts that Barrier D would provide the same number of benefited receptors at a height of 10 feet. However, 12 feet is recommended as the minimum height that is required to break the visual line of sight to passing trucks.

Barrier F is a potential noise barrier for the residences in CNE F, shown in Figure 2, and is located along the northbound side of Rolling Road, directly north of Greeley Boulevard. The barrier would benefit both of the impacted receptors with 11 to 12 decibels of noise reduction, as well as three additional non-impacted receptors. The barrier would be 12 feet high and 504 feet long, with a surface area of 6,042 square feet and a surface area per benefited receptor of 1,208. Barrier F would be both feasible and reasonable because it meets the noise reduction design goal for all impacted receptors and has a surface area per benefitted receptor under 1,600. Additionally, Barrier F is predicted to provide the same number of benefited receptors at a height of 10 feet. A minimum height of 12 feet is recommended, though, to break the visual line of sight to passing trucks.

Barrier G is a potential noise barrier for CNE G, which is located along the southbound side of Rolling Road between Greeley Boulevard and Barnack Drive. The barrier, shown in Figure 2, would benefit four of the seven impacted receptors with 10 to 13 decibels of noise reduction. The three non-benefitted impacts are on properties with driveways extending to Rolling Road, preventing the extension of the barrier directly between them and the road. In addition, one non-impacted receptor would be benefitted. The barrier would be 12 feet high, 534 feet long, a surface area of 6,404 square feet, and a surface area per benefitted receptor of 1,281. Barrier G would be feasible because it benefits more than half of the impacted receptors in CNE G. It also would be reasonable because it meets the noise reduction design goal for all of the impacted receptors for which noise abatement is feasible, and has a surface area per benefitted receptor lower than the maximum of 1,600. Additionally, this barrier would provide the same number of benefits with a height of 10 feet, but a minimum height of 12 feet is recommended to break the visual line of sight to passing trucks.

Barrier H is a potential noise barrier for the residences in CNE H, shown in Figure 2. Barrier H is located along the northbound side of Rolling Road between Greeley Boulevard and Taft Drive, and would benefit all nine impacted receptors with 8 to 13 decibels of noise reduction. In addition, Barrier H would benefit one other receptor in this area. The barrier would be 12 feet high and 1,014 feet long, with a surface area of 12,170 square feet. The barrier would be feasible because it benefits all impacted receptors, and reasonable both because it meets the 7-decibel noise reduction design goal at all of these receptors, and has a surface area per benefitted receptor of 1,217. It should also be noted that analysis predicts that Barrier H would provide the same number of benefitted receptors at a height of 10 feet. However, 12 feet is recommended as the minimum height that is required to break the visual line of sight to passing trucks.

Barrier J is a potential noise barrier for the residences in CNE J, as shown in Figure 2. Barrier J is located along the northbound side of Rolling Road between Taft Drive and Bellamy Avenue, and would benefit all nine of the sixteen total impacted receptors that can be benefitted from a barrier in this area with noise reduction levels between 8 and 11 decibels. Six of the other seven impacted receptors are homes with driveways out to Rolling Road, where a barrier could not be built. The seventh appears not to be feasible due to unique parcel circumstances and limits of the Rolling Road right of way. This barrier would also benefit an additional 6 receptors in CNE J. Barrier J would be 12 feet high, 881 feet in length, with a surface area of 10,593 square feet. It would be feasible because it benefits all impacted receptors that can be treated, and reasonable both because it meets the 7-decibel noise reduction design goal at all of these receptors, and has a surface area per benefitted receptor of 981. Also of note, this barrier would provide the same number of benefits with a height of 10 feet, but a minimum height of 12 feet is recommended to break the visual line of sight to passing trucks.

Barrier N is a potential noise barrier for the residences in CNE N and is located along the southbound side of Rolling Road, between Viola St and the southern project limit. Barrier N would benefit all nine of its impacted receivers with a noise level reduction of 10 to 13 decibels. It would also benefit an additional ten receptors in CNE N. The barrier, as shown in Figure 2, would be 12 feet high and 912 feet long, with a surface area of 10,945 square feet. It would be both feasible because it benefits all of the impacted receptors. Barrier N also would be reasonable because it meets the 7-decibel noise reduction design goal at all of the impacted receptors and it has a surface area per benefitted receptor of 576.

Barrier O is a potential noise barrier for residences within CNE O, which is located along the northbound side of Rolling Road near the southern project limit between Viola Street and Petunia Street. The barrier, shown in Figure 2, would benefit all ten of the impacted receptors in the CNE with 7 to 11 decibels of noise reduction, as well as two additional non-impacted receptors. Barrier O

would be 12 feet high, 874 feet long, and have a surface area of 10,472 feet. The barrier would be both feasible and reasonable, as it meets the noise design reduction goal at six of the impacted receptors, and has a surface area per benefited receptor of 873. Additionally, Barrier O would provide the same number of benefits with a height of 10 feet, but a minimum height of 12 feet is recommended to break the visual line of sight to passing trucks.

DRAFT

Figure 2
Location Map for Common Noise
Environments, Receptors,
Build Contours and Barriers

Rolling Road (Route 638)
Widening Project,
Fairfax County, Virginia

VDOT Project No. 0638-029-156, C-504, P-104, R-204;
 UPC No. 5559

Receiver Site and Number

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

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

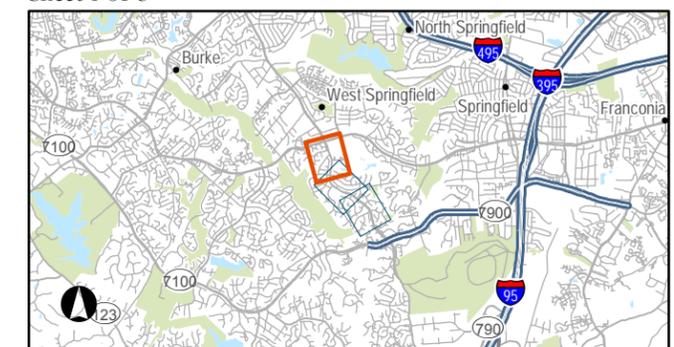
▲ M# Measurement Site

Noise Barriers

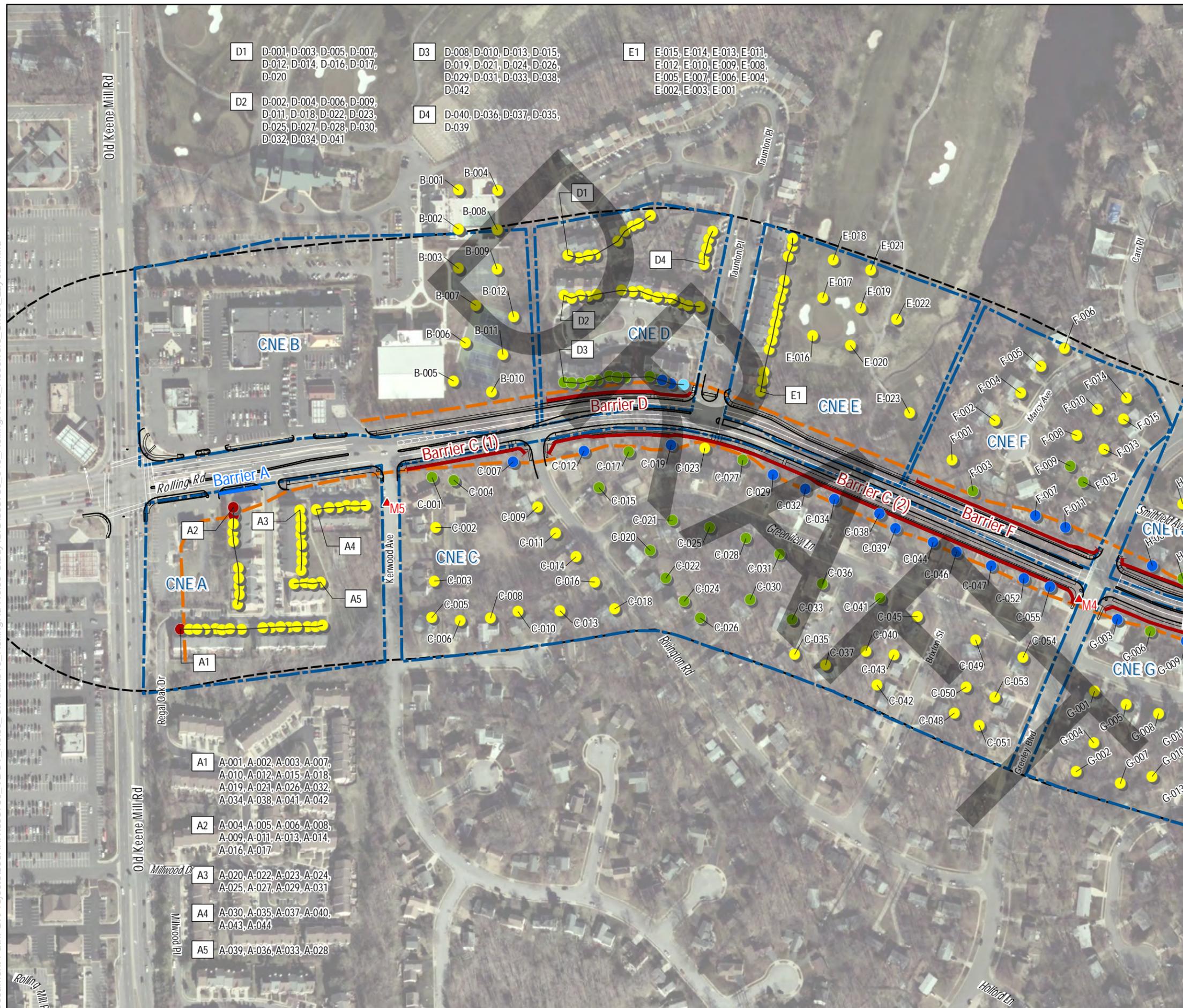
- Feasible and Reasonable
- Not Feasible
- CNE Boundary
- 66 dBA Noise Contour
- 500' Noise Study Area



Sheet 1 of 3



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D1 D-001, D-003, D-005, D-007, D-012, D-014, D-016, D-017, D-020

D2 D-002, D-004, D-006, D-009, D-011, D-018, D-022, D-023, D-025, D-027, D-028, D-030, D-032, D-034, D-041

D3 D-008, D-010, D-013, D-015, D-019, D-021, D-024, D-026, D-029, D-031, D-033, D-038, D-042

D4 D-040, D-036, D-037, D-035, D-039

E1 E-015, E-014, E-013, E-011, E-012, E-010, E-009, E-008, E-005, E-007, E-006, E-004, E-002, E-003, E-001

A1 A-001, A-002, A-003, A-007, A-010, A-012, A-015, A-018, A-019, A-021, A-026, A-032, A-034, A-038, A-041, A-042

A2 A-004, A-005, A-006, A-008, A-009, A-011, A-013, A-014, A-016, A-017

A3 A-020, A-022, A-023, A-024, A-025, A-027, A-029, A-031

A4 A-030, A-035, A-037, A-040, A-043, A-044

A5 A-039, A-036, A-033, A-028

Figure 2
Location Map for Common Noise
Environments, Receptors,
Build Contours and Barriers

Rolling Road (Route 638)
Widening Project,
Fairfax County, Virginia

VDOT Project No. 0638-029-156, C-504, P-104, R-204;
 UPC No. 5559

Receiver Site and Number

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

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

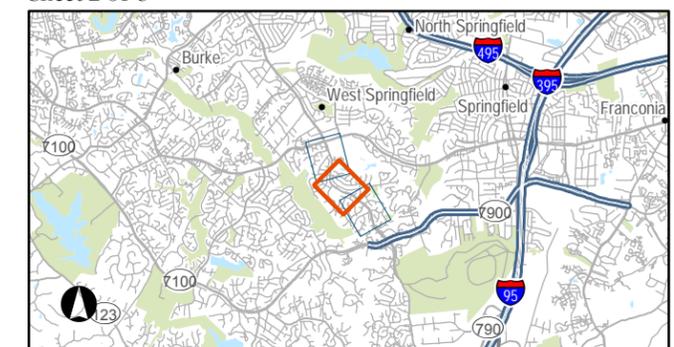
▲ M# Measurement Site

Noise Barriers

- ▬ Feasible and Reasonable
- ▬ Not Feasible
- ▬ CNE Boundary
- ▬ 66 dBA Noise Contour
- ▬ 500' Noise Study Area



Sheet 2 of 3



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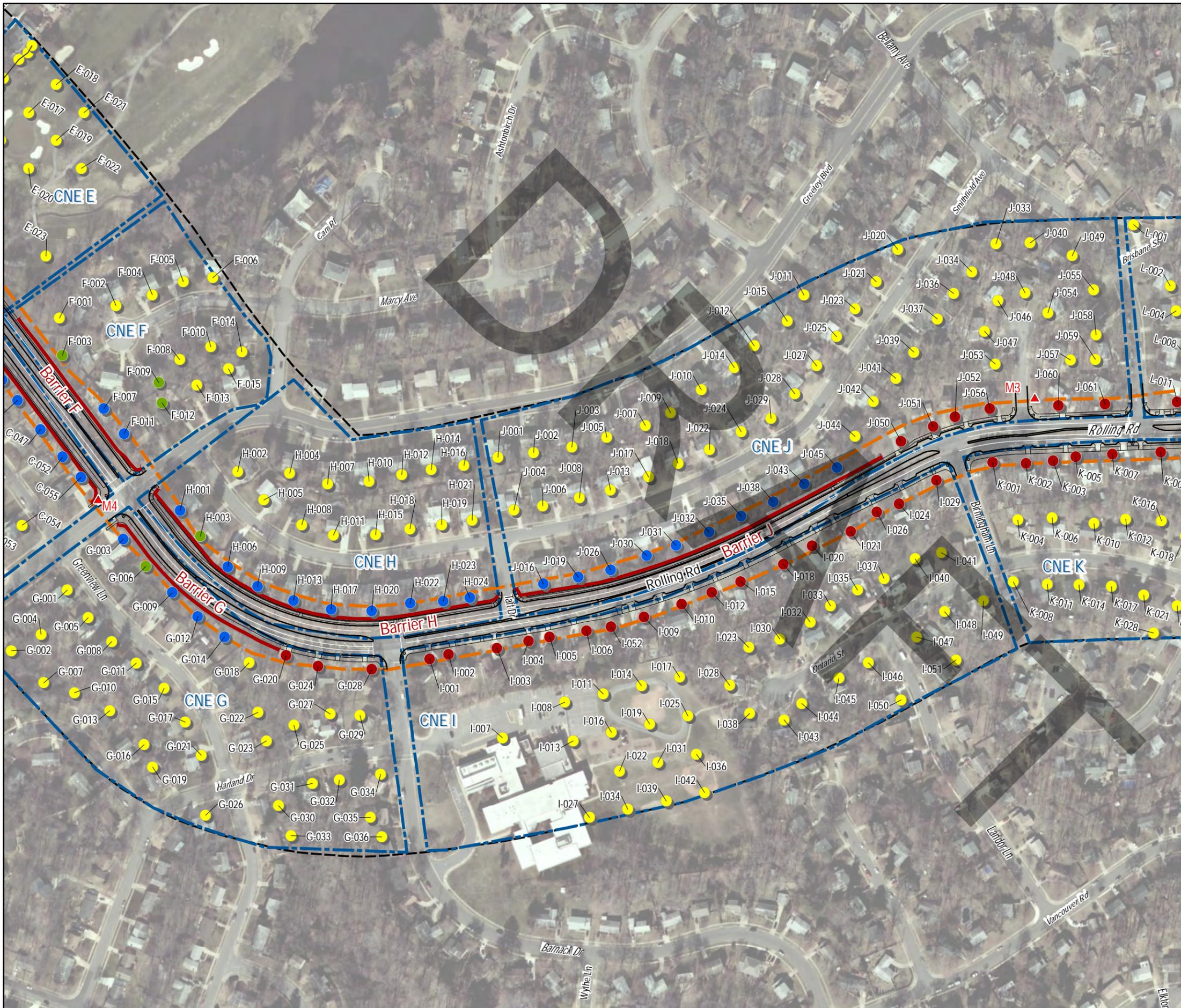


Figure 2
Location Map for Common Noise
Environments, Receptors,
Build Contours and Barriers

Rolling Road (Route 638)
Widening Project,
Fairfax County, Virginia

VDOT Project No. 0638-029-156, C-504, P-104, R-204;
 UPC No. 5559

Receiver Site and Number

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

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

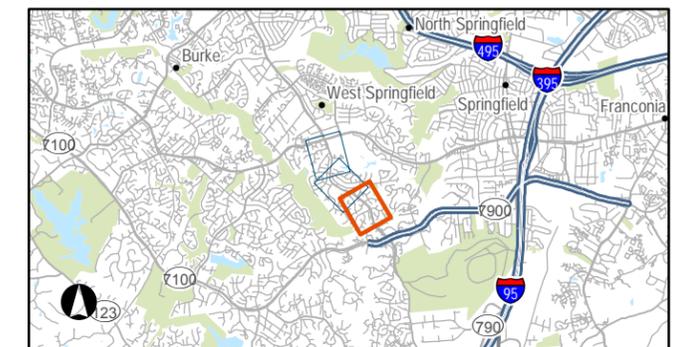
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Noise Barriers

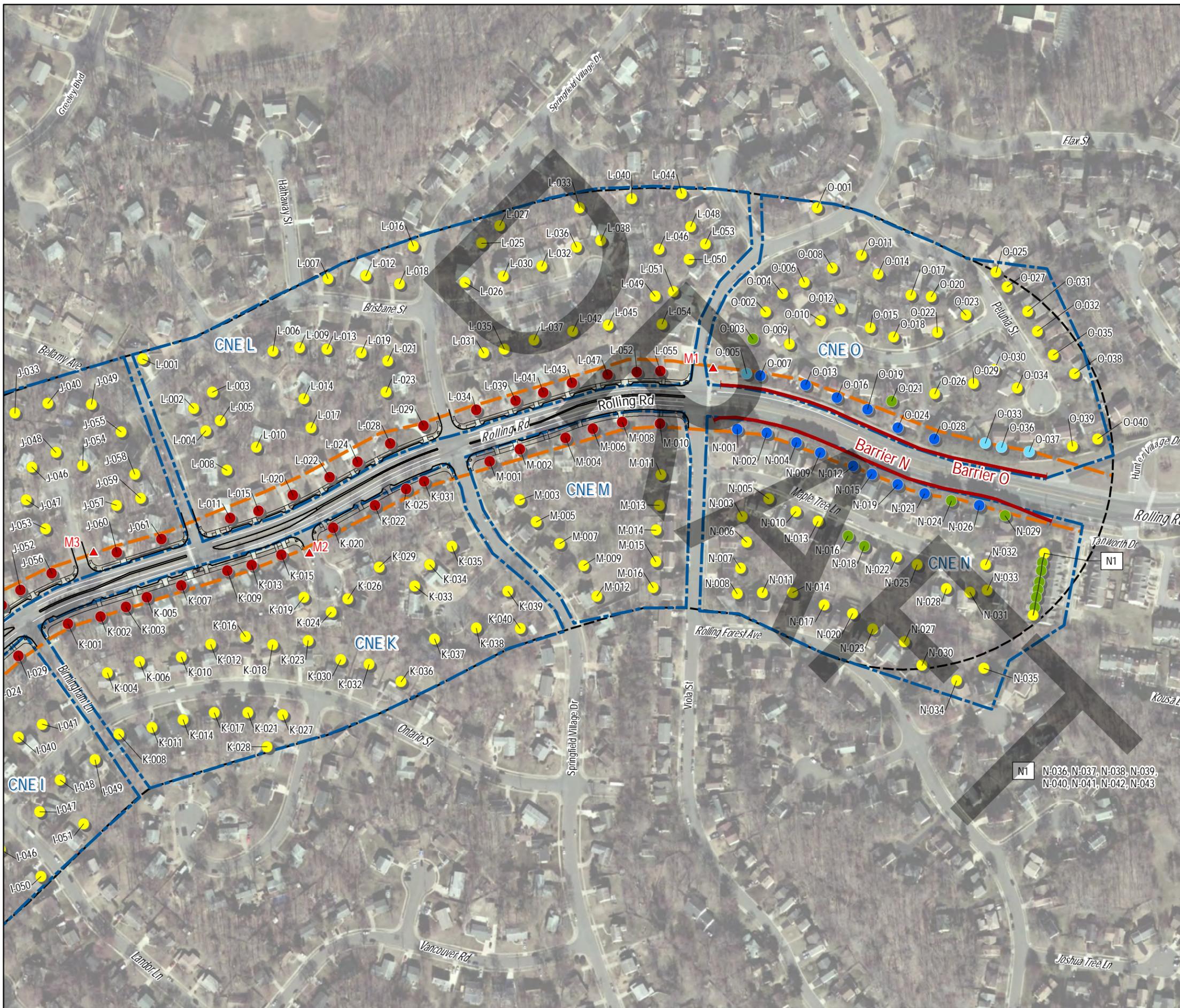
- ▬ Feasible and Reasonable
- ▬ Not Feasible
- ▬ CNE Boundary
- ▬ 66 dBA Noise Contour
- ▬ 500' Noise Study Area



Sheet 3 of 3



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N1 N-036, N-037, N-038, N-039,
 N-040, N-041, N-042, N-043

7 CONSTRUCTION NOISE CONSIDERATION

Construction noise provisions are contained in Section 107.16(b)3 Noise of the 2007 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 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.

8 INFORMATION FOR LOCAL GOVERNMENT OFFICIALS

FHWA and VDOT policies require that VDOT provides certain information to local officials within whose jurisdiction the highway project is located, to minimize future traffic noise impacts of Type I projects on currently undeveloped lands. (Type I projects involve highway improvements with noise analysis.) This information must include information on noise-compatible land-use planning, noise impact zones in undeveloped land in the highway project corridor and federal participation in Type II projects (noise abatement only). This section of the report provides that information, as well as information about VDOT's noise abatement program.

8.1 Noise-Compatible Land-Use Planning

Section 9.0 of VDOT's 2011 noise policy outlines VDOT's approach to communication with local officials and provides information and resources on highway noise and noise-compatible land-use planning. VDOT's intention is to assist local officials in planning the uses of undeveloped land adjacent to highways to minimize the potential impacts of highway traffic noise.

Entering the Quiet Zone is a brochure that provides general information and examples to elected officials, planners, developers, and the general public about the problem of traffic noise and effective responses to it. A link to this brochure on FHWA's website is provided:

http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/land_use/qz00.cfm

A wide variety of administrative strategies may be used to minimize or eliminate potential highway noise impacts, thereby preventing the need or desire for costly noise abatement structures such as noise barriers in future years. There are five broad categories of such strategies:

- Zoning,
 - Other legal restrictions (subdivision control, building codes, health codes),
 - Municipal ownership or control of the land,
 - Financial incentives for compatible development, and
 - Educational and advisory services.
- The Audible Landscape: A Manual for Highway and Land Use is a very well-written and comprehensive guide addressing these noise-compatible land use planning strategies, with significant detailed information. This document is available through FHWA's Website, at http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/audible_landscape/al00.cfm

8.2 VDOT's Noise Abatement Program

Information on VDOT's noise program is provided in "Highway Traffic Noise Impact Analysis Guidance Manual (Version 2)," updated September 16, 2011. This document is available from VDOT's Noise Abatement Section, Virginia Department of Transportation, 1401 E. Broad St., Richmond, VA 23219.

9 REFERENCES

Federal Highway Administration, US Department of Transportation. July 13, 2010. *23 CFR Part 772, as amended 75 FR 39820, Procedures for Abatement of Highway Traffic Noise and Construction Noise*. Washington, DC:

http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/

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Federal Highway Administration, US Department of Transportation. January 1998. *FHWA Traffic Noise Model, Version 1.0 User's Guide. FHWA-PD-96-009*. Cambridge, MA: U.S. Department of Transportation, Research and Special Programs Administration, John A. Volpe National Transportation Systems Center, Acoustics Facility.

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http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/old_versions/tnm_version_10/tech_manual/index.cfm

US Department of Transportation, John A. Volpe National Transportation Systems Center. July 2004. *TNM Version 2.5 Addendum to Validation of FHWA's TNM[®] (TNM) Phase 1 report*. Cambridge, MA.

http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/model_validation/

Virginia Department of Transportation. July 14, 2015. *Highway Traffic Noise Impact Analysis Guidance Manual (Version 7)*. Richmond, VA. <http://www.virginiadot.org/projects/pr-noise-walls-about.asp>

APPENDIX A LIST OF PREPARERS

This appendix lists the preparers of this report.

Preparers with HMMH are as follows:

- Christopher Bajdek, traffic data processing, documentation, Project Manager
- Michael Hamilton, report graphics
- Hayden Jubera, noise impact assessment, barrier analysis, documentation
- Christopher Menge, quality assurance
- Christopher Nottoli, noise model development
- Zachary Weiss, noise modeling, noise impact assessment, barrier analysis, documentation

TNM Certification of HMMH's Principal-in-Charge, Christopher Menge, is on file in VDOT's offices.

APPENDIX B TRAFFIC DATA USED IN NOISE ANALYSIS

This appendix provides the loudest-hour roadway traffic volumes and speeds used in the noise modeling for the 2016 Existing conditions (Table 8), as well as the 2040 Build alternative (Table 9).

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Table 8 Loudest-hour (5 PM) Traffic Data used in the Noise Analysis for 2016 Existing Conditions

Roadway Name (from ENTRADA sheet)	Direction	Loudest Hour Vehicle Volumes (vph)			Speed (mph)
		Auto	MT	HT	
A-Rte286-WofRte638-Entrada2016-05	EB	1487	21	16	50
A-Rte286-WofRte638-Entrada2016-05	WB	2058	91	87	50
B-Rte289-EofRte638-Entrada2016-05	EB	1070	40	20	59
B-Rte289-EofRte638-Entrada2016-05	WB	2493	21	61	50
C-Rte289-WB-Off-ramp-toRte638-Entrada2016-05	EB	551	4	1	34
D-Rte286-WB-On-ramp-frRte638-Entrada2016-05	WB	1347	55	17	31
E-Rte638BtwRte289-Rte644-Entrada2016-05	NB	1048	13	17	30
E-Rte638BtwRte289-Rte644-Entrada2016-05	SB	676	14	2	40
F-Rte644-EofRte638-Entrada2016-05	EB	860	17	21	45
F-Rte644-EofRte638-Entrada2016-05	WB	1132	7	16	45
G-Rte638-NofRte644-Entrada2016-05	NB	1208	17	12	40
G-Rte638-NofRte644-Entrada2016-05	SB	996	16	8	40
H-Rte644-WofRte638-Entrada2016-05	EB	823	21	17	45
H-Rte644-WofRte638-Entrada2016-05	WB	1562	19	31	45

Table 9 Loudest-hour (5 PM) Traffic Data used in the Noise Analysis for the 2040 Build Alternative

Roadway Name (from ENTRADA sheet)	Direction	Loudest Hour Vehicle Volumes (vph)			Speed (mph)
		Auto	MT	HT	
A-Rte286-WofRte638-Entrada2016-05	EB	1882	27	21	50
A-Rte286-WofRte638-Entrada2016-05	WB	2604	116	110	50
B-Rte289-EofRte638-Entrada2016-05	EB	1350	51	25	56
B-Rte289-EofRte638-Entrada2016-05	WB	3146	27	77	50
C-Rte289-WB-Off-ramp-toRte638-Entrada2016-05	EB	703	5	1	31
D-Rte286-WB-On-ramp-frRte638-Entrada2016-05	WB	1735	71	22	28
E-Rte638BtwRte289-Rte644-Entrada2016-05	NB	1675	20	27	32
E-Rte638BtwRte289-Rte644-Entrada2016-05	SB	1080	22	3	32
F-Rte644-EofRte638-Entrada2016-05	EB	1078	21	26	45
F-Rte644-EofRte638-Entrada2016-05	WB	1420	8	21	45
G-Rte638-NofRte644-Entrada2016-05	NB	1515	21	15	40
G-Rte638-NofRte644-Entrada2016-05	SB	1249	20	10	40
H-Rte644-WofRte638-Entrada2016-05	EB	1032	27	22	45
H-Rte644-WofRte638-Entrada2016-05	WB	1959	23	38	49

APPENDIX C PREDICTED TRAFFIC NOISE LEVELS

This appendix provides the predicted noise levels at all of the receiver (receptor) locations shown in the study graphics for the 2016 Existing and design-year 2040 Build alternative. The receptor sites are organized by CNE. Also provided are the name and location of each receiver site, the number of dwelling units or recreational units assigned, a description of the land use, the applicable Noise Abatement Criteria, and the predicted loudest-hour L_{eq} sound levels. Build alternative sound levels are shown both without and with the effects of potential noise abatement measures, wherever noise barriers were found to be feasible from an engineering standpoint. No-barrier sound levels shown in red indicate impact due to either NAC or substantial increase in existing noise levels.

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
A-001	Kenwood Apartments, 6354 Regal Oak Dr, Row 3 Flr. 1	1	B	Res.	67	66	67	NA	NA
A-002	Kenwood Apartments, 8375 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	60	61	NA	NA
A-003	Kenwood Apartments, 8389 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	59	60	NA	NA
A-004	Kenwood Apartments, 8367 Millwood Dr, Row 1 Flr. 1	1	B	Res.	67	65	67	64	4
A-005	Kenwood Apartments, 8381 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	63	66	63	2
A-006	Kenwood Apartments, 8355 Regal Oak Ct, Row 2 Flr. 1	1	B	Res.	67	62	63	62	1
A-007	Kenwood Apartments, 6351 Regal Oak Dr, Row 3 Flr. 1	1	B	Res.	67	62	64	NA	NA
A-008	Kenwood Apartments, 6357 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	63	65	64	1
A-009	Kenwood Apartments, 6356 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	62	64	63	1
A-010	Kenwood Apartments, 8371 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	57	58	NA	NA
A-011	Kenwood Apartments, 6368 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	61	63	62	0
A-012	Kenwood Apartments, 6363 Regal Oak Dr, Row 3 Flr. 1	1	B	Res.	67	61	62	NA	NA
A-013	Kenwood Apartments, 6350 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	61	63	62	0
A-014	Kenwood Apartments, 6370 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	61	62	62	0
A-015	Kenwood Apartments, 8385 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	56	57	NA	NA
A-016	Kenwood Apartments, 6353 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	61	62	62	0
A-017	Kenwood Apartments, 6372 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	61	62	62	0
A-018	Kenwood Apartments, 8391 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	55	56	NA	NA
A-019	Kenwood Apartments, 8377 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	53	54	NA	NA
A-020	Kenwood Apartments, 8357 Regal Oak Ct, Row 1 Flr. 1	1	B	Res.	67	59	62	NA	NA
A-021	Kenwood Apartments, 6364 Regal Oak Dr, Row 3 Flr. 1	1	B	Res.	67	56	58	NA	NA
A-022	Kenwood Apartments, 8364 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	57	60	NA	NA
A-023	Kenwood Apartments, 8373 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	54	58	NA	NA
A-024	Kenwood Apartments, 6365 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	54	57	NA	NA
A-025	Kenwood Apartments, 8361 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
A-026	Kenwood Apartments, 8379 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	51	52	NA	NA
A-027	Kenwood Apartments, 6361 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
A-028	Kenwood Apartments, 6366 Regal Oak Dr, Row 2 Flr. 1	1	B	Res.	67	45	47	NA	NA
A-029	Kenwood Apartments, 8369 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	47	49	NA	NA
A-030	Kenwood Apartments, 8387 Millwood Dr, Row 1 Flr. 1	1	B	Res.	67	61	64	NA	NA
A-031	Kenwood Apartments, 8362 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	46	48	NA	NA
A-032	Kenwood Apartments, 8359 Regal Oak Ct, Row 3 Flr. 1	1	B	Res.	67	50	51	NA	NA
A-033	Kenwood Apartments, 8353 Regal Oak Ct, Row 2 Flr. 1	1	B	Res.	67	46	48	NA	NA
A-034	Kenwood Apartments, 6352 Regal Oak Dr, Row 3 Flr. 1	1	B	Res.	67	51	53	NA	NA
A-035	Kenwood Apartments, 8351 Regal Oak Ct, Row 1 Flr. 1	1	B	Res.	67	61	63	NA	NA
A-036	Kenwood Apartments, 8381 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	46	48	NA	NA
A-037	Kenwood Apartments, 6358 Regal Oak Dr, Row 1 Flr. 1	1	B	Res.	67	62	65	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
A-038	Kenwood Apartments, 8361 Regal Oak Ct, Row 3 Flr. 1	1	B	Res.	67	48	49	NA	NA
A-039	Kenwood Apartments, 8366 Millwood Dr, Row 2 Flr. 1	1	B	Res.	67	45	48	NA	NA
A-040	Kenwood Apartments, 6355 Regal Oak Dr, Row 1 Flr. 1	1	B	Res.	67	62	65	NA	NA
A-041	Kenwood Apartments, 8360 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
A-042	Kenwood Apartments, 8363 Millwood Dr, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
A-043	Kenwood Apartments, 8361 Millwood Dr, Row 1 Flr. 1	1	B	Res.	67	61	61	NA	NA
A-044	Kenwood Apartments, 6359 Regal Oak Dr, Row 1 Flr. 1	1	B	Res.	67	62	64	NA	NA
B-001	Springfield Golf & Country Club Swimming Pool, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	52	54	NA	NA
B-002	Springfield Golf & Country Club Swimming Pool, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	53	55	NA	NA
B-003	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	53	55	NA	NA
B-004	Springfield Golf & Country Club Swimming Pool, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	52	54	NA	NA
B-005	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 1 Flr. 1	1	C	Rec.	67	52	57	NA	NA
B-006	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	52	56	NA	NA
B-007	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	52	55	NA	NA
B-008	Springfield Golf & Country Club Swimming Pool, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	52	54	NA	NA
B-009	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	52	55	NA	NA
B-010	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 1 Flr. 1	1	C	Rec.	67	55	60	NA	NA
B-011	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	54	58	NA	NA
B-012	Springfield Golf & Country Club Tennis Courts, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	52	55	NA	NA
C-001	6509 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	63	65	56	10
C-002	8302 Newby Ct, Row 2 Flr. 1	1	B	Res.	67	49	51	48	2
C-003	6513 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	47	50	48	1
C-004	6517 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	58	63	54	6
C-005	6505 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	48	50	49	1
C-006	6413 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	48	50	49	1
C-007	8300 Newby Ct, Row 1 Flr. 1	1	B	Res.	67	64	66	56	10

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
C-008	6402 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	49	51	49	2
C-009	8305 Brixton St, Row 2 Flr. 1	1	B	Res.	67	55	56	53	3
C-010	6410 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	50	52	49	3
C-011	8315 Kenwood Ave, Row 2 Flr. 1	1	B	Res.	67	52	54	51	3
C-012	8305 Kenwood Ave, Row 1 Flr. 1	1	B	Res.	67	65	66	55	10
C-013	6527 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	51	51	48	3
C-014	6406 Rivington Rd, Row 2 Flr. 1	1	B	Res.	67	51	51	48	3
C-015	6519 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	55	57	51	6
C-016	6401 Gregory Ct, Row 3 Flr. 1	1	B	Res.	67	50	52	48	3
C-017	6507 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	63	64	54	9
C-018	6411 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	51	52	48	4
C-019	6401 Rivington Rd, Row 1 Flr. 1	1	B	Res.	67	66	66	54	11
C-020	6407 Rivington Rd, Row 2 Flr. 1	1	B	Res.	67	51	53	48	5
C-021	8304 Greeley Blvd, Row 2 Flr. 1	1	B	Res.	67	53	55	49	6
C-022	6400 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	51	54	48	6
C-023	8303 Newby Ct, Row 1 Flr. 1	1	B	Res.	67	64	62	52	4
C-024	6504 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	51	55	48	6
C-025	8302 Brixton St, Row 2 Flr. 1	1	B	Res.	67	53	55	49	6
C-026	8303 Kenwood Ave, Row 3 Flr. 1	1	B	Res.	67	52	55	49	6
C-027	6506 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	65	61	52	6
C-028	6511 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	52	55	49	5
C-029	6503 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	65	66	54	12
C-030	6512 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	52	55	49	6
C-031	6518 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	52	55	50	5
C-032	6524 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	63	66	54	11
C-033	8305 Newby Ct, Row 3 Flr. 1	1	B	Res.	67	51	53	48	5
C-034	8303 Brixton St, Row 1 Flr. 1	1	B	Res.	67	61	66	55	11
C-035	8300 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	50	52	48	4
C-036	6415 Rivington Rd, Row 2 Flr. 1	1	B	Res.	67	52	56	50	5
C-037	6409 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	50	52	49	3
C-038	6407 Gregory Ct, Row 1 Flr. 1	1	B	Res.	67	61	67	55	13
C-039	6404 Rivington Rd, Row 1 Flr. 1	1	B	Res.	67	58	66	54	8
C-040	6521 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	49	51	48	3
C-041	6408 Rivington Rd, Row 2 Flr. 1	1	B	Res.	67	52	56	50	5
C-042	6526 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	47	49	47	2
C-043	8304 Newby Ct, Row 3 Flr. 1	1	B	Res.	67	49	51	48	2
C-044	6403 Gregory Ct, Row 1 Flr. 1	1	B	Res.	67	61	66	55	11

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
C-045	6523 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	52	55	50	4
C-046	6515 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	62	66	55	11
C-047	6409 Gregory Ct, Row 1 Flr. 1	1	B	Res.	67	63	66	54	12
C-048	6508 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	45	47	46	1
C-049	8301 Kenwood Ave, Row 2 Flr. 1	1	B	Res.	67	51	53	50	2
C-050	8304 Brixton St, Row 3 Flr. 1	1	B	Res.	67	47	49	47	1
C-051	6405 Gregory Ct, Row 3 Flr. 1	1	B	Res.	67	45	47	45	1
C-052	8306 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	64	67	54	13
C-053	6403 Rivington Rd, Row 3 Flr. 1	1	B	Res.	67	47	49	48	1
C-054	6520 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	52	55	53	1
C-055	6525 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	65	67	53	14
D-001	6408 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	49	50	50	0
D-002	6418 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
D-003	6426 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	49	0
D-004	6403 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
D-005	6418 Eastleigh Ct, Row 3 Flr. 1	1	B	Res.	67	48	50	50	0
D-006	6409 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
D-007	6402 Eastleigh Ct, Row 3 Flr. 1	1	B	Res.	67	48	51	50	1
D-008	6400 Eastleigh Ct, Row 1 Flr. 1	1	B	Res.	67	56	61	56	6
D-009	6406 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
D-010	8236 Taunton Pl, Row 1 Flr. 1	1	B	Res.	67	56	61	56	7
D-011	8242 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
D-012	6410 Eastleigh Ct, Row 3 Flr. 1	1	B	Res.	67	46	48	47	1
D-013	6424 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	56	61	55	8
D-014	6402 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	46	48	48	0
D-015	6404 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	57	62	55	9
D-016	6427 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	47	48	48	0
D-017	6421 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	49	0
D-018	6411 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	48	52	51	1
D-019	6413 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	57	62	55	8
D-020	6404 Eastleigh Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	49	0
D-021	6412 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	57	62	54	8
D-022	6406 Eastleigh Ct, Row 2 Flr. 1	1	B	Res.	67	49	52	52	1
D-023	6429 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	49	52	52	1
D-024	8240 Taunton Pl, Row 1 Flr. 1	1	B	Res.	67	57	62	54	9

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						Existing	Build		
							No-Barrier	With-Barrier	IL
D-025	6428 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	49	53	52	1
D-026	6405 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	56	62	53	9
D-027	8244 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	50	53	53	1
D-028	6419 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	50	54	53	1
D-029	6414 Eastleigh Ct, Row 1 Flr. 1	1	B	Res.	67	59	64	55	10
D-030	6420 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	50	54	54	1
D-031	6407 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	60	65	55	11
D-032	6412 Eastleigh Ct, Row 2 Flr. 1	1	B	Res.	67	51	55	54	1
D-033	6408 Eastleigh Ct, Row 1 Flr. 1	1	B	Res.	67	61	66	55	12
D-034	6415 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	51	55	55	0
D-035	6410 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	46	49	49	0
D-036	6422 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	47	50	50	0
D-037	8238 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	46	49	49	0
D-038	6417 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	62	67	55	12
D-039	6425 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	46	49	49	0
D-040	6401 Wainfleet Ct, Row 3 Flr. 1	1	B	Res.	67	46	49	49	0
D-041	6400 Wainfleet Ct, Row 2 Flr. 1	1	B	Res.	67	52	56	55	1
D-042	6423 Wainfleet Ct, Row 1 Flr. 1	1	B	Res.	67	63	67	61	6
E-001	8233 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	48	52	NA	NA
E-002	8257 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	50	54	NA	NA
E-003	8253 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	49	53	NA	NA
E-004	8247 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	50	54	NA	NA
E-005	8241 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	52	56	NA	NA
E-006	8243 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	51	55	NA	NA
E-007	8237 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	51	55	NA	NA
E-008	8239 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	52	56	NA	NA
E-009	8249 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	53	57	NA	NA
E-010	8259 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	53	57	NA	NA
E-011	8245 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	56	60	NA	NA
E-012	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	54	58	NA	NA
E-013	8261 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	57	60	NA	NA
E-014	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	58	61	NA	NA

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						Existing	Build		
							No-Barrier	With-Barrier	IL
E-015	8251 Taunton Pl, Row 1 Flr. 1	1	B	Res.	67	61	62	NA	NA
E-016	8255 Taunton Pl, Row 2 Flr. 1	1	B	Res.	67	55	58	NA	NA
E-017	8235 Taunton Pl, Row 3 Flr. 1	1	B	Res.	67	49	52	NA	NA
E-018	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	48	52	NA	NA
E-019	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	49	53	NA	NA
E-020	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 2 Flr. 1	1	C	Rec.	67	54	58	NA	NA
E-021	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	48	52	NA	NA
E-022	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 3 Flr. 1	1	C	Rec.	67	50	54	NA	NA
E-023	Springfield Golf & Country Club Golf Course, 8301 Old Keene Mill Rd, Row 1 Flr. 1	1	C	Rec.	67	55	59	NA	NA
F-001	8209 Marcy Ave, Row 1 Flr. 1	1	B	Res.	67	58	63	59	2
F-002	8203 Marcy Ave, Row 2 Flr. 1	1	B	Res.	67	53	57	56	1
F-003	8216 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	62	65	56	6
F-004	8202 Marcy Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	53	1
F-005	8218 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	50	52	51	0
F-006	8214 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	49	51	50	1
F-007	8201 Marcy Ave, Row 1 Flr. 1	1	B	Res.	67	63	66	55	12
F-008	8210 Marcy Ave, Row 2 Flr. 1	1	B	Res.	67	50	53	50	3
F-009	8204 Marcy Ave, Row 2 Flr. 1	1	B	Res.	67	53	57	50	7
F-010	8206 Marcy Ave, Row 3 Flr. 1	1	B	Res.	67	49	51	49	2
F-011	8208 Marcy Ave, Row 1 Flr. 1	1	B	Res.	67	62	67	55	11
F-012	8207 Marcy Ave, Row 2 Flr. 1	1	B	Res.	67	54	59	52	7
F-013	8205 Marcy Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	51	3
F-014	8212 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	47	50	49	1
F-015	8211 Marcy Ave, Row 3 Flr. 1	1	B	Res.	67	49	51	50	2
G-001	6619 Sandover Ct, Row 2 Flr. 1	1	B	Res.	67	51	54	52	2
G-002	6706 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	44	45	45	0
G-003	6702 Barnack Dr, Row 1 Flr. 1	1	B	Res.	67	61	66	56	10
G-004	6608 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	46	47	47	1
G-005	8302 Harland Dr, Row 2 Flr. 1	1	B	Res.	67	51	54	52	2

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CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
G-006	6606 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	61	65	53	12
G-007	6704 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	45	46	46	0
G-008	6612 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	51	55	52	3
G-009	6706 Barnack Dr, Row 1 Flr. 1	1	B	Res.	67	62	66	53	13
G-010	6617 Sandover Ct, Row 3 Flr. 1	1	B	Res.	67	45	46	46	0
G-011	8303 Harland Dr, Row 2 Flr. 1	1	B	Res.	67	51	55	52	3
G-012	8305 Harland Dr, Row 1 Flr. 1	1	B	Res.	67	63	66	54	13
G-013	6604 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	44	44	44	1
G-014	6703 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	64	66	54	12
G-015	6607 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	51	54	52	3
G-016	6708 Barnack Dr, Row 3 Flr. 1	1	B	Res.	67	42	43	43	1
G-017	6613 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	49	52	50	2
G-018	8301 Harland Dr, Row 1 Flr. 1	1	B	Res.	67	61	63	57	3
G-019	6623 Sandover Ct, Row 3 Flr. 1	1	B	Res.	67	45	46	45	1
G-020	8307 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	67	67	67	0
G-021	6600 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	47	50	47	2
G-022	8310 Harland Dr, Row 2 Flr. 1	1	B	Res.	67	54	55	53	1
G-023	8304 Harland Dr, Row 2 Flr. 1	1	B	Res.	67	51	53	51	1
G-024	8301 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	66	66	66	0
G-025	6621 Sandover Ct, Row 2 Flr. 1	1	B	Res.	67	52	53	51	0
G-026	6615 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	46	47	46	0
G-027	8309 Harland Dr, Row 2 Flr. 1	1	B	Res.	67	50	49	49	0
G-028	6609 Greenview Ln, Row 1 Flr. 1	1	B	Res.	67	66	66	66	0
G-029	6611 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	52	52	52	0
G-030	6603 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	46	47	46	0
G-031	6602 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	48	49	48	1
G-032	6701 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	47	48	47	0
G-033	8305 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	43	44	44	0
G-034	6605 Greenview Ln, Row 2 Flr. 1	1	B	Res.	67	50	51	51	0
G-035	6610 Greenview Ln, Row 3 Flr. 1	1	B	Res.	67	43	44	43	1
G-036	6702 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	47	47	47	0
H-001	8207 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	63	66	57	8
H-002	8236 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	53	1
H-003	8230 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	63	65	55	10
H-004	8233 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	47	49	48	1
H-005	8218 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1

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CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
H-006	8211 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	63	68	55	12
H-007	8237 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	46	48	47	1
H-008	8209 Greeley Blvd, Row 2 Flr. 1	1	B	Res.	67	50	52	51	1
H-009	8228 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	60	68	55	13
H-010	8201 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	46	48	48	1
H-011	8225 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	49	51	50	1
H-012	8223 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	47	49	48	1
H-013	8231 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	62	68	55	12
H-014	8226 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	47	49	48	1
H-015	8235 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	49	52	50	2
H-016	8203 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	47	49	48	1
H-017	8227 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	63	68	55	12
H-018	8222 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	49	53	52	1
H-019	8205 Greeley Blvd, Row 2 Flr. 1	1	B	Res.	67	50	54	53	1
H-020	8220 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	62	67	55	13
H-021	8219 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	52	1
H-022	8229 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	62	66	55	10
H-023	8234 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	62	68	56	11
H-024	8221 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	62	68	56	11
I-001	6700 Ontario St, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-002	6714 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-003	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 1 Flr. 1	1	C	Rec.	67	67	67	NA	NA
I-004	6701 Ontario St, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-005	6702 Ontario St, Row 1 Flr. 1	1	B	Res.	67	68	67	NA	NA
I-006	6800 Ontario St, Row 1 Flr. 1	1	B	Res.	67	68	67	NA	NA
I-007	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	51	52	NA	NA
I-008	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	51	53	NA	NA
I-009	6724 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-010	6806 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-011	Rolling Valley Elementary School, 6703 Barnack Dr, Row 2 Flr. 1	1	D	Int.	52	26	28	NA	NA
I-012	6807 Ontario St, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-013	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	50	51	NA	NA
I-014	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	51	52	NA	NA
I-015	6716 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
I-016	6808 Ontario St, Row 2 Flr. 1	1	B	Res.	67	49	51	NA	NA
I-017	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	51	52	NA	NA
I-018	6718 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	66	66	NA	NA
I-019	6810 Ontario St, Row 2 Flr. 1	1	B	Res.	67	49	51	NA	NA
I-020	6726 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
I-021	6809 Ontario St, Row 1 Flr. 1	1	B	Res.	67	65	66	NA	NA
I-022	6803 Landor Ln, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
I-023	6802 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	49	52	NA	NA
I-024	8112 Birmingham Ln, Row 1 Flr. 1	1	B	Res.	67	65	66	NA	NA
I-025	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	48	50	NA	NA
I-026	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 1 Flr. 1	1	C	Rec.	67	66	67	NA	NA
I-027	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 3 Flr. 1	1	C	Rec.	67	45	47	NA	NA
I-028	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	49	50	NA	NA
I-029	6728 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	66	67	NA	NA
I-030	6802 Ontario St, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
I-031	6804 Ontario St, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
I-032	6811 Ontario St, Row 2 Flr. 1	1	B	Res.	67	51	52	NA	NA
I-033	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 2 Flr. 1	1	C	Rec.	67	51	53	NA	NA
I-034	6812 Ontario St, Row 3 Flr. 1	1	B	Res.	67	46	47	NA	NA
I-035	6802 Landor Ln, Row 2 Flr. 1	1	B	Res.	67	52	54	NA	NA
I-036	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 3 Flr. 1	1	C	Rec.	67	47	48	NA	NA
I-037	6800 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	52	53	NA	NA
I-038	6703 Ontario St, Row 3 Flr. 1	1	B	Res.	67	48	49	NA	NA
I-039	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 3 Flr. 1	1	C	Rec.	67	46	47	NA	NA
I-040	6712 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	53	54	NA	NA
I-041	6803 Ontario St, Row 2 Flr. 1	1	B	Res.	67	52	54	NA	NA
I-042	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 3 Flr. 1	1	C	Rec.	67	46	48	NA	NA
I-043	6808 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
I-044	6805 Ontario St, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
I-045	6801 Ontario St, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
I-046	6804 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	47	48	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
I-047	6722 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
I-048	Rolling Valley Elementary School Playground, 6703 Barnack Dr, Row 3 Flr. 1	1	C	Rec.	67	48	51	NA	NA
I-049	8110 Birmingham Ln, Row 3 Flr. 1	1	B	Res.	67	50	52	NA	NA
I-050	6710 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	45	47	NA	NA
I-051	6708 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	44	46	NA	NA
I-052	6720 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	67	NA	NA
J-001	8123 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	47	49	49	1
J-002	8119 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	48	50	50	1
J-003	8105 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	47	49	49	0
J-004	8117 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	53	1
J-005	6817 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	47	50	49	1
J-006	8215 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	53	1
J-007	8115 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	48	50	49	1
J-008	8114 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
J-009	8106 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	47	50	49	1
J-010	8109 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	47	49	49	1
J-011	8211 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	44	46	46	0
J-012	8209 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	46	49	48	1
J-013	8103 Glover Ct, Row 2 Flr. 1	1	B	Res.	67	50	52	51	1
J-014	8117 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	46	49	49	0
J-015	8107 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	45	47	47	0
J-016	6813 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	63	68	56	12
J-017	8208 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	50	52	51	2
J-018	8205 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	53	51	2
J-019	8103 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	63	68	56	12
J-020	8201 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	44	46	NA	NA
J-021	8104 Glover Ct, Row 3 Flr. 1	1	B	Res.	67	46	48	NA	NA
J-022	8121 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	53	51	2
J-023	6809 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	46	49	NA	NA
J-024	8125 Greeley Blvd, Row 2 Flr. 1	1	B	Res.	67	50	52	51	1
J-025	8133 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	47	50	NA	NA
J-026	6811 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	63	68	56	12
J-027	8204 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	48	51	50	1
J-028	8207 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	49	51	51	1
J-029	8112 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	50	53	52	1
J-030	8129 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	62	67	55	12
J-031	8214 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	62	67	55	12
J-032	8102 Glover Ct, Row 1 Flr. 1	1	B	Res.	67	62	67	55	12
J-033	8120 Smithfield Ave, Row 3 Flr. 1	1	B	Res.	67	45	47	NA	NA
J-034	8115 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	46	49	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
J-035	8131 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	62	67	55	11
J-036	6804 Bellamy Ave, Row 3 Flr. 1	1	B	Res.	67	48	51	NA	NA
J-037	8213 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
J-038	8119 Greeley Blvd, Row 1 Flr. 1	1	B	Res.	67	63	67	56	12
J-039	8113 Greeley Blvd, Row 2 Flr. 1	1	B	Res.	67	51	56	55	0
J-040	8127 Greeley Blvd, Row 3 Flr. 1	1	B	Res.	67	44	47	NA	NA
J-041	8216 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	53	58	NA	NA
J-042	8121 Greeley Blvd, Row 2 Flr. 1	1	B	Res.	67	55	60	59	0
J-043	8212 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	63	67	58	8
J-044	8116 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	59	64	64	0
J-045	8202 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	64	67	66	1
J-046	8105 Glover Ct, Row 2 Flr. 1	1	B	Res.	67	49	52	NA	NA
J-047	8200 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	52	56	NA	NA
J-048	6802 Bellamy Ave, Row 2 Flr. 1	1	B	Res.	67	49	51	NA	NA
J-049	8101 Glover Ct, Row 3 Flr. 1	1	B	Res.	67	44	46	NA	NA
J-050	6810 Bellamy Ave, Row 1 Flr. 1	1	B	Res.	67	65	69	NA	NA
J-051	6814 Bellamy Ave, Row 1 Flr. 1	1	B	Res.	67	65	68	NA	NA
J-052	6812 Bellamy Ave, Row 1 Flr. 1	1	B	Res.	67	65	68	NA	NA
J-053	8111 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	55	60	NA	NA
J-054	8203 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
J-055	6808 Bellamy Ave, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
J-056	6815 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	65	68	NA	NA
J-057	8108 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	54	59	NA	NA
J-058	8110 Smithfield Ave, Row 2 Flr. 1	1	B	Res.	67	51	55	NA	NA
J-059	8100 Glover Ct, Row 2 Flr. 1	1	B	Res.	67	54	58	NA	NA
J-060	8113 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	65	68	NA	NA
J-061	8210 Smithfield Ave, Row 1 Flr. 1	1	B	Res.	67	65	68	NA	NA
K-001	8104 Sherbrooke Ct, Row 1 Flr. 1	1	B	Res.	67	66	67	NA	NA
K-002	6828 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	65	67	NA	NA
K-003	6826 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	65	67	NA	NA
K-004	6825 Ontario St, Row 2 Flr. 1	1	B	Res.	67	54	57	NA	NA
K-005	6816 Ontario St, Row 1 Flr. 1	1	B	Res.	67	66	67	NA	NA
K-006	8111 Birmingham Ln, Row 2 Flr. 1	1	B	Res.	67	53	56	NA	NA
K-007	8104 Ashford Ct, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
K-008	8100 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	50	53	NA	NA
K-009	6816 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
K-010	6821 Ontario St, Row 2 Flr. 1	1	B	Res.	67	52	54	NA	NA
K-011	6820 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	50	52	NA	NA
K-012	6902 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	51	55	NA	NA
K-013	8102 Sherbrooke Ct, Row 1 Flr. 1	1	B	Res.	67	66	67	NA	NA
K-014	6820 Ontario St, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
K-015	6901 Ontario St, Row 1 Flr. 1	1	B	Res.	67	65	67	NA	NA
K-016	6824 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
K-017	6815 Ontario St, Row 3 Flr. 1	1	B	Res.	67	48	51	NA	NA
K-018	8110 Springfield Village Dr, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
K-019	6903 Ontario St, Row 2 Flr. 1	1	B	Res.	67	55	59	NA	NA
K-020	6904 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	67	68	NA	NA
K-021	6818 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	48	50	NA	NA
K-022	6829 Ontario St, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
K-023	8105 Ashford Ct, Row 2 Flr. 1	1	B	Res.	67	49	51	NA	NA
K-024	8102 Springfield Village Dr, Row 2 Flr. 1	1	B	Res.	67	52	56	NA	NA
K-025	8103 Ashford Ct, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
K-026	8122 Edmonton Ct, Row 2 Flr. 1	1	B	Res.	67	52	57	NA	NA
K-027	6818 Ontario St, Row 3 Flr. 1	1	B	Res.	67	46	49	NA	NA
K-028	8103 Sherbrooke Ct, Row 3 Flr. 1	1	B	Res.	67	46	49	NA	NA
K-029	6822 Ontario St, Row 2 Flr. 1	1	B	Res.	67	52	56	NA	NA
K-030	6814 Ontario St, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA
K-031	8101 Sherbrooke Ct, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
K-032	8102 Ashford Ct, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA
K-033	6824 Ontario St, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
K-034	8106 Sherbrooke Ct, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
K-035	6823 Ontario St, Row 2 Flr. 1	1	B	Res.	67	52	56	NA	NA
K-036	6827 Ontario St, Row 3 Flr. 1	1	B	Res.	67	48	49	NA	NA
K-037	6817 Ontario St, Row 3 Flr. 1	1	B	Res.	67	48	50	NA	NA
K-038	6822 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA
K-039	6900 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	50	53	NA	NA
K-040	6819 Ontario St, Row 3 Flr. 1	1	B	Res.	67	49	52	NA	NA
L-001	6917 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	46	48	NA	NA
L-002	6903 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	48	51	NA	NA
L-003	8008 Viola St, Row 3 Flr. 1	1	B	Res.	67	49	52	NA	NA
L-004	6806 Brisbane St, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
L-005	8004 Viola St, Row 2 Flr. 1	1	B	Res.	67	50	53	NA	NA
L-006	6812 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	48	52	NA	NA
L-007	6902 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	46	49	NA	NA
L-008	6813 Brisbane St, Row 2 Flr. 1	1	B	Res.	67	54	59	NA	NA
L-009	6813 Bellamy Ave, Row 3 Flr. 1	1	B	Res.	67	49	52	NA	NA
L-010	6812 Cabot Ct, Row 2 Flr. 1	1	B	Res.	67	53	57	NA	NA
L-011	6904 Brisbane St, Row 1 Flr. 1	1	B	Res.	67	65	69	NA	NA
L-012	8006 Viola St, Row 3 Flr. 1	1	B	Res.	67	46	48	NA	NA
L-013	6915 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	49	52	NA	NA
L-014	6913 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	51	55	NA	NA
L-015	6901 Brisbane St, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
L-016	6901 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	45	47	NA	NA
L-017	7914 Narcissus Ct, Row 2 Flr. 1	1	B	Res.	67	52	57	NA	NA
L-018	8017 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
L-019	6825 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	49	52	NA	NA
L-020	6801 Brisbane St, Row 1 Flr. 1	1	B	Res.	67	65	69	NA	NA
L-021	6906 Brisbane St, Row 2 Flr. 1	1	B	Res.	67	48	51	NA	NA
L-022	6909 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	65	69	NA	NA
L-023	8004 Viola St, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
L-024	6907 Brisbane St, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA
L-025	6810 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	44	45	NA	NA
L-026	8018 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	47	50	NA	NA
L-027	6811 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	40	42	NA	NA
L-028	6815 Brisbane St, Row 1 Flr. 1	1	B	Res.	67	65	68	NA	NA
L-029	6905 Brisbane St, Row 1 Flr. 1	1	B	Res.	67	64	67	NA	NA
L-030	8002 Viola St, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
L-031	6827 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	52	55	NA	NA
L-032	6814 Cabot Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
L-033	8005 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	40	41	NA	NA
L-034	7916 Narcissus Ct, Row 1 Flr. 1	1	B	Res.	67	64	68	NA	NA
L-035	6905 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	52	55	NA	NA
L-036	6808 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	47	48	NA	NA
L-037	6814 Brisbane St, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
L-038	8002 Viola St, Row 3 Flr. 1	1	B	Res.	67	46	48	NA	NA
L-039	8010 Springfield Village Dr, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA
L-040	6911 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	43	45	NA	NA
L-041	7004 Springfield Village Ct, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA
L-042	6811 Bellamy Ave, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
L-043	6809 Bellamy Ave, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA
L-044	6908 Brisbane St, Row 3 Flr. 1	1	B	Res.	67	45	46	NA	NA
L-045	6802 Brisbane St, Row 2 Flr. 1	1	B	Res.	67	53	56	NA	NA
L-046	6815 Cabot Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
L-047	7912 Narcissus Ct, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA
L-048	6907 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	46	48	NA	NA
L-049	6903 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	51	55	NA	NA
L-050	6813 Cabot Ct, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA
L-051	6829 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	51	54	NA	NA
L-052	7002 Springfield Village Ct, Row 1 Flr. 1	1	B	Res.	67	66	69	NA	NA
L-053	8009 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA
L-054	6909 Brisbane St, Row 2 Flr. 1	1	B	Res.	67	54	59	NA	NA
L-055	6919 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
M-001	8109 Springfield Village Dr, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
M-002	8104 Viola St, Row 1 Flr. 1	1	B	Res.	67	67	68	NA	NA
M-003	8102 Viola St, Row 2 Flr. 1	1	B	Res.	67	53	55	NA	NA
M-004	6916 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
M-005	8110 Viola St, Row 2 Flr. 1	1	B	Res.	67	51	53	NA	NA
M-006	8100 Viola St, Row 1 Flr. 1	1	B	Res.	67	67	68	NA	NA
M-007	8111 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	50	52	NA	NA
M-008	6908 Rolling Rd, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
M-009	8103 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	50	52	NA	NA
M-010	8108 Viola St, Row 1 Flr. 1	1	B	Res.	67	66	68	NA	NA
M-011	8106 Viola St, Row 2 Flr. 1	1	B	Res.	67	52	55	NA	NA
M-012	8105 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	50	52	NA	NA
M-013	6912 Rolling Rd, Row 2 Flr. 1	1	B	Res.	67	50	52	NA	NA
M-014	6910 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	49	51	NA	NA
M-015	6914 Rolling Rd, Row 3 Flr. 1	1	B	Res.	67	48	50	NA	NA
M-016	8107 Springfield Village Dr, Row 3 Flr. 1	1	B	Res.	67	47	49	NA	NA
N-001	7020 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	66	67	58	10
N-002	7109 Rolling Forest Ave, Row 1 Flr. 1	1	B	Res.	67	66	68	56	12
N-003	7111 Rolling Forest Ave, Row 2 Flr. 1	1	B	Res.	67	50	52	50	1
N-004	7203 Duck Ct, Row 1 Flr. 1	1	B	Res.	67	66	68	56	11
N-005	7012 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	54	57	53	4
N-006	7113 Rolling Forest Ave, Row 2 Flr. 1	1	B	Res.	67	48	50	48	2
N-007	7019 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	49	51	49	2
N-008	7021 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	50	51	49	2
N-009	7016 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	66	67	55	12
N-010	7017 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	54	56	52	4
N-011	8105 Viola St, Row 3 Flr. 1	1	B	Res.	67	51	52	50	2
N-012	7015 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	66	66	54	12
N-013	7001 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	54	56	52	4
N-014	7008 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	50	52	49	3
N-015	7018 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	66	66	54	12
N-016	7011 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	54	56	51	5
N-017	7005 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	50	52	49	3
N-018	7103 Rolling Forest Ave, Row 2 Flr. 1	1	B	Res.	67	53	55	50	5
N-019	8101 Viola St, Row 1 Flr. 1	1	B	Res.	67	66	66	54	12
N-020	7004 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	50	52	49	3
N-021	7006 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	66	66	54	12
N-022	7101 Rolling Forest Ave, Row 2 Flr. 1	1	B	Res.	67	53	54	51	3
N-023	7107 Rolling Forest Ave, Row 3 Flr. 1	1	B	Res.	67	50	51	48	3

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		
							No-Barrier	With-Barrier	IL
N-024	7003 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	64	64	54	10
N-025	7115 Rolling Forest Ave, Row 2 Flr. 1	1	B	Res.	67	52	54	51	3
N-026	8107 Viola St, Row 1 Flr. 1	1	B	Res.	67	65	67	54	13
N-027	7002 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	49	50	48	3
N-028	7013 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	50	52	49	3
N-029	7007 Maple Tree Ln, Row 1 Flr. 1	1	B	Res.	67	59	60	52	7
N-030	7002 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	49	51	48	3
N-031	7105 Rolling Forest Ave, Row 2 Flr. 1	1	B	Res.	67	50	52	49	3
N-032	7010 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	52	53	49	4
N-033	7014 Maple Tree Ln, Row 2 Flr. 1	1	B	Res.	67	50	51	48	4
N-034	7009 Maple Tree Ln, Row 3 Flr. 1	1	B	Res.	67	50	52	49	4
N-035	7205 Duck Ct, Row 3 Flr. 1	1	B	Res.	67	50	52	48	4
N-036	7115 Tanworth Dr, Row 1	1	B	Res.	67	56	57	55	4
N-037	7113 Tanworth Dr, Row 2	1	B	Res.	67	53	54	50	5
N-038	7111 Tanworth Dr, Row 2	1	B	Res.	67	51	52	48	5
N-039	7109 Tanworth Dr, Row 2	1	B	Res.	67	50	51	47	5
N-040	7107 Tanworth Dr, Row 3	1	B	Res.	67	49	50	46	5
N-041	7105 Tanworth Dr, Row 3	1	B	Res.	67	48	50	45	5
N-042	7103 Tanworth Dr, Row 3	1	B	Res.	67	47	49	45	5
N-043	7101 Tanworth Dr, Row 3	1	B	Res.	67	47	48	44	4
O-001	8012 Daffodil Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	49	0
O-002	8016 Daffodil Ct, Row 2 Flr. 1	1	B	Res.	67	53	57	54	3
O-003	8009 Viola St, Row 2 Flr. 1	1	B	Res.	67	57	62	57	5
O-004	8004 Daffodil Ct, Row 3 Flr. 1	1	B	Res.	67	51	54	52	2
O-005	8005 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	65	68	61	6
O-006	7919 Viola St, Row 3 Flr. 1	1	B	Res.	67	50	52	51	1
O-007	8001 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	65	68	61	7
O-008	7022 Petunia St, Row 3 Flr. 1	1	B	Res.	67	49	51	51	1
O-009	8003 Daffodil Ct, Row 2 Flr. 1	1	B	Res.	67	53	58	54	4
O-010	7006 Petunia St, Row 2 Flr. 1	1	B	Res.	67	49	51	51	0
O-011	8009 Daffodil Ct, Row 3 Flr. 1	1	B	Res.	67	48	50	50	0
O-012	8017 Daffodil Ct, Row 2 Flr. 1	1	B	Res.	67	48	51	50	0
O-013	7024 Petunia St, Row 1 Flr. 1	1	B	Res.	67	64	67	60	7
O-014	8014 Daffodil Ct, Row 3 Flr. 1	1	B	Res.	67	47	49	49	0
O-015	7915 Viola St, Row 2 Flr. 1	1	B	Res.	67	49	52	51	1
O-016	8020 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	64	67	56	11
O-017	7004 Petunia St, Row 3 Flr. 1	1	B	Res.	67	49	51	50	1

Table 10: Predicted Existing (2016) and Design Year (2040) Noise Levels due to Traffic on Rolling Road

CNA Site No.	Address	Recp. Unit	Cat.*	Land Use*	NAC Imp. Crit.	Loudest-Hour Leq (dBA)**			
						Existing	Build		IL
							No-Barrier	With-Barrier	
O-018	7019 Petunia St, Row 2 Flr. 1	1	B	Res.	67	51	54	52	2
O-019	7002 Petunia St, Row 1 Flr. 1	1	B	Res.	67	65	67	58	10
O-020	8005 Viola St, Row 3 Flr. 1	1	B	Res.	67	48	50	49	1
O-021	8018 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	62	64	58	7
O-022	7009 Petunia St, Row 2 Flr. 1	1	B	Res.	67	51	53	52	1
O-023	7011 Petunia St, Row 3 Flr. 1	1	B	Res.	67	50	52	52	1
O-024	7917 Viola St, Row 1 Flr. 1	1	B	Res.	67	66	68	57	11
O-025	7020 Petunia St, Row 3 Flr. 1	1	B	Res.	67	49	51	50	0
O-026	7020 Petunia St, Row 2 Flr. 1	1	B	Res.	67	55	59	55	4
O-027	7913 Viola St, Row 3 Flr. 1	1	B	Res.	67	49	51	51	0
O-028	8013 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	65	68	60	8
O-029	8007 Daffodil Ct, Row 2 Flr. 1	1	B	Res.	67	53	56	54	1
O-030	8015 Daffodil Ct, Row 2 Flr. 1	1	B	Res.	67	52	54	54	1
O-031	7023 Petunia St, Row 3 Flr. 1	1	B	Res.	67	51	53	52	0
O-032	8001 Viola St, Row 2 Flr. 1	1	B	Res.	67	51	53	53	0
O-033	7016 Petunia St, Row 1 Flr. 1	1	B	Res.	67	64	66	60	6
O-034	7914 Viola St, Row 2 Flr. 1	1	B	Res.	67	52	54	54	1
O-035	7017 Petunia St, Row 2 Flr. 1	1	B	Res.	67	52	54	53	1
O-036	7013 Petunia St, Row 1 Flr. 1	1	B	Res.	67	64	66	60	6
O-037	8019 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	64	66	61	5
O-038	8011 Daffodil Ct, Row 2 Flr. 1	1	B	Res.	67	53	55	55	0
O-039	7015 Petunia St, Row 1 Flr. 1	1	B	Res.	67	62	64	63	1
O-040	8000 Daffodil Ct, Row 1 Flr. 1	1	B	Res.	67	59	63	62	1

* Cat. Refers to FHWA Activity Category. Res.= Residential, Rec.= Recreational, Mon.= Noise Monitoring Site, 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 counted as benefited.
 Source: HMMH, 2017

APPENDIX D NOISE MEASUREMENT DATA

This appendix includes data acquired during the site visit and noise measurement program, including noise monitor calibration data, site sketches, photographs, field noise and traffic data sheets. Also included are noise measurement results spreadsheets, which include site summary results, noise monitor acoustic data with L_{eq} calculations, and simultaneous traffic count data.

D
R
A
F
T

Calibration data

Translated: 27-Sep-2016 17:12:44

Translated File: G:\Projects\306XXX\306780_VDOT_Noise_On-call\010_RollingRd-Noise-Study\Measurements_Raw\RollingRd_26SEP16.slmdl

SLM: 820A1212

Firmware Rev.: 1.620 31Oct2000

Software: SlmUtility v2.01

Harris Miller Miller Hanson

77 S. Bedford St Burlington MA

Tel# 781-229-0707

306780

Rec #	Date	Time	Level	Mode	Status	Cal Offset
1	26-Sep-16	10:07:36	114	Manual	Stable	7.83
2	26-Sep-16	11:01:35	114.28	Manual	Stable	7.83
3	26-Sep-16	11:30:33	114.15	Manual	Stable	7.83
4	26-Sep-16	13:52:51	114.3	Manual	Stable	7.83
5	26-Sep-16	15:32:26	114.19	Manual	Stable	7.83
6	26-Sep-16	16:50:59	114.19	Manual	Stable	7.83
7	26-Sep-16	17:24:09	114.18	Manual	Stable	7.83

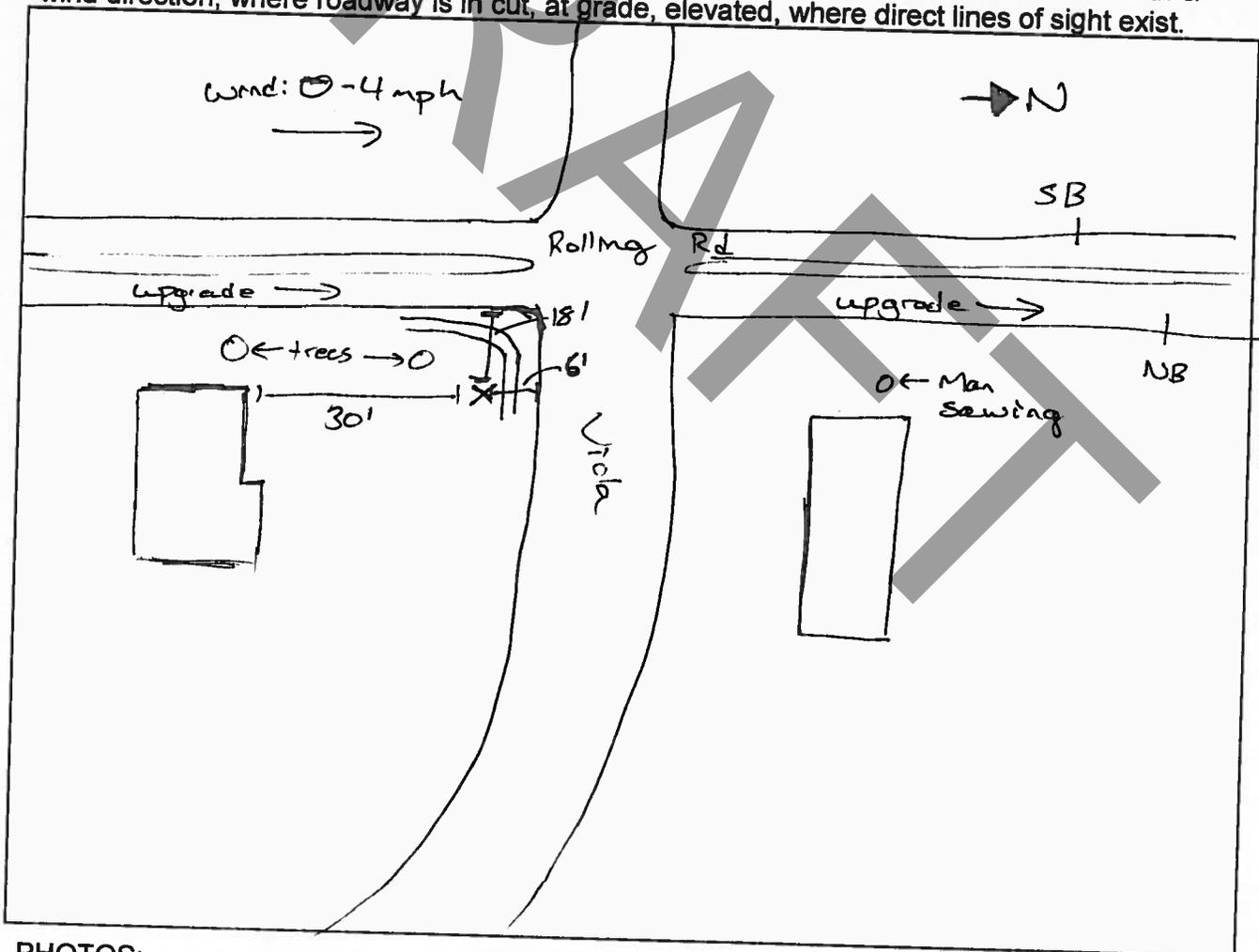


PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: M1
 ADDRESS: 8009 Viola
 OWNER: _____
 DESCRIPTION: _____
 NOISE SOURCES: Airplanes, Birds, Insects, Dogs, Yardwork (very faint)
 NOISE MONITOR: LD 820 #1 S/N: 1212
 MICROPHONE/PREAMP: GRAS 40AQ/LD PRM828 S/N: ~~215851~~ 25851/1906
 CALIBRATOR: CAL250 S/N: 2367
 TEMP. RANGE (°F): 66-70 WEATHER CONDITIONS: Overcast

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: _____

A photograph of a residential property. In the foreground, a silver tripod stands on a green lawn, with a black microphone attached to its top. A white rectangular box with the text 'M1' is positioned to the left of the tripod. The background features a two-story house with white siding, a brick chimney, and a white garage door. A large, leafy tree is on the right side of the house, and a paved road curves away in the distance. A large, semi-transparent watermark is overlaid on the center of the image.

M1



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County

JOB NO.: 306780.010 (VDOT UPC 5559)

MEASUREMENT SITE NO.: M/

PERSONNEL: cjb/zfw

ADDRESS/DESCRIPTION: 8009 Uroka St.

DATE: 9/26/16

#	1 Minute Period Starting	Meas'd Leq (dBA)	✓ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	10:10	65.6						
2	:11	66.3						
3	12	62.4		1				
4	13	65.7						car turned on to Rolling Rd.
5	14	62.9					Airplane (Astron)	00+59
6	15	65.6		1				
7	16	61.5		1				
8	17	66.5						Dogs running nearby (no barking)
9	18	65.4		1				
10	19	66.2						
11	20	67.4						
12	21	67.6						
13	22	68.7						
14	23	67.7						
15	24	64.4						
16	25	61.4						
17	26	65.4					Birds begin	
18	27	64.8						
19	28	66.1		1				
20	29	64.4						car turned on to Uroka
21	30	62.3						
22	31	64.9						car honk ~ 30s
23	32	66.0						
24	33	63.6						
25	34	66.2						speaky truck brakes ~30s
26	35	64.6		1				
27	36	63.7						car turned on to Uroka
28	37	63.5						
29	38	65.9		11				
30	39	65.6		11				2 cars turned on to Rolling Rd. car turned onto Uroka

TOTAL Leq =

SUBSET Leq =

✓ = Other sources contributed to Leq

X = Exclude period - contaminated by non-characteristic sources

1 car turned onto Rolling Rd

idled till 39:25

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

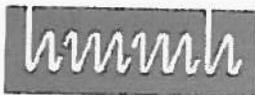


PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: CNEA START TIME: 10:10
 MEASUREMENT SITE NO.: M1 END TIME: 10:40
 ADDRESS/DESCRIPTION: VIOLA ST DATE: 9/26/2016
 PERSONNEL: CJB/ZFW

ROADWAY:		DIRECTION 1:	DIRECTION 2:
<u>ROLLING ROAD</u>		<u>NB</u>	<u>SB</u>
		<u>(NEAR)</u>	<u>(FAR)</u>
First Sample: <u>5</u> minutes			
Start Time: <u>10:12</u>	Automobiles	<u>28</u>	_____
	Medium Trucks (6 Tires)	<u>1</u>	_____
	Heavy Trucks (>6 Tires)	<u>0</u>	_____
	Average speed (mph)	_____	_____
Second Sample: <u>5</u> minutes			
Start Time: <u>10:19</u>	Automobiles	<u>SOME</u>	<u>32</u>
	Medium Trucks (6 Tires)	<u>HT & MT</u>	<u>1</u>
	Heavy Trucks (>6 Tires)	<u>DURING</u>	<u>0</u>
	Average speed (mph)	<u>SB COUNT</u>	_____
Third Sample: <u>5</u> minutes			
Start Time: <u>10:26</u>	Automobiles	<u>25</u>	_____
	Medium Trucks (6 Tires)	<u>3</u>	_____
	Heavy Trucks (>6 Tires)	<u>0</u>	_____
	Average speed (mph)	_____	_____
Fourth Sample: <u>5</u> minutes			
Start Time: <u>10:32</u>	Automobiles	<u>1</u>	<u>31</u>
	Medium Trucks (6 Tires)	_____	<u>2</u>
	Heavy Trucks (>6 Tires)	_____	<u>0</u>
	Average speed (mph)	_____	_____

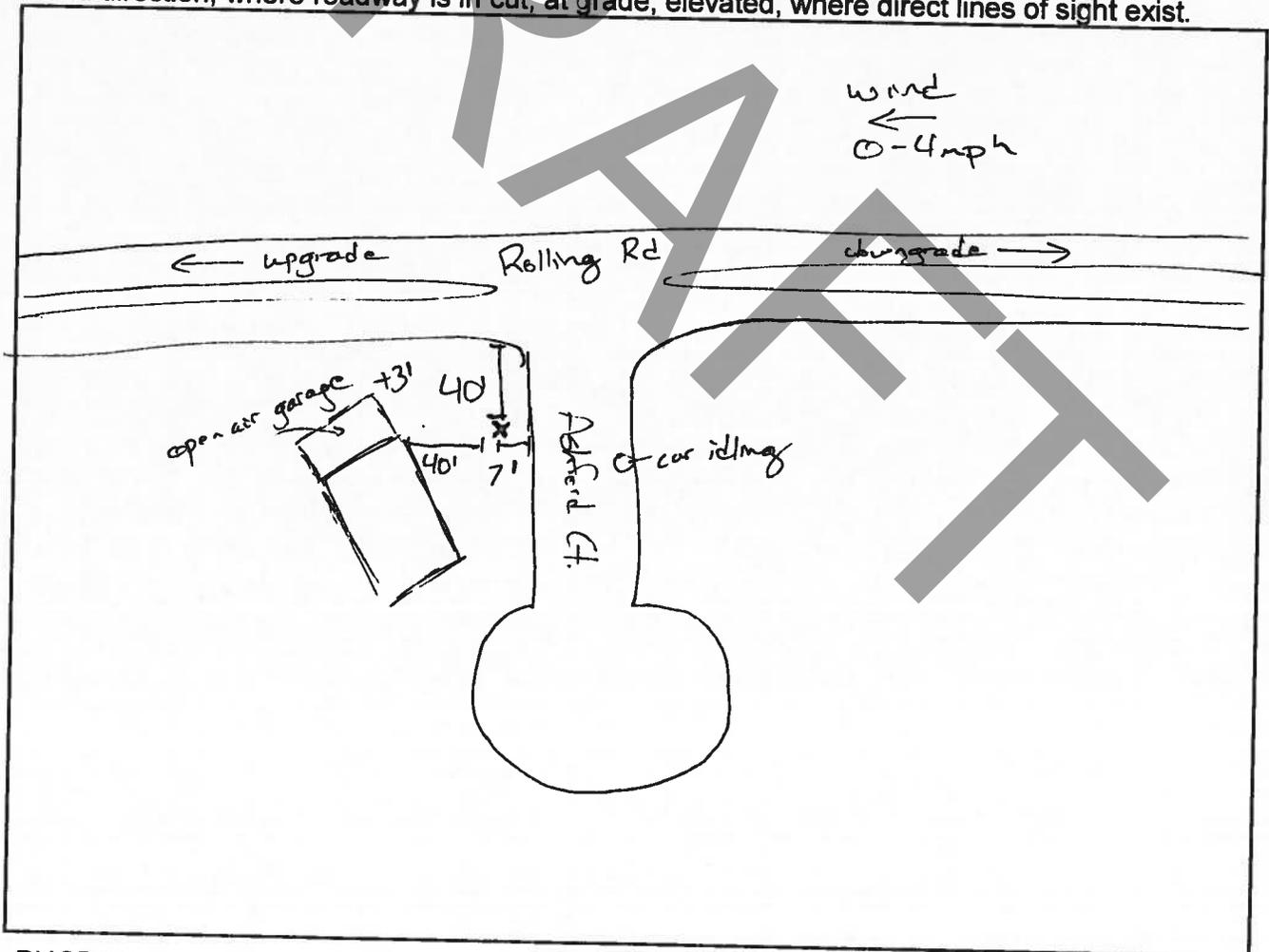


PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: M2
 ADDRESS: 6828 Rolling Rd
 OWNER: _____
 DESCRIPTION: _____
 NOISE SOURCES: Insects, Airplane
 NOISE MONITOR: LD 820 #1 S/N: 1212
 MICROPHONE: GRAS 40AQ/LDPRM828 S/N: 25851/1906
 CALIBRATOR: CAL 280 S/N: 2367
 TEMP. RANGE (°F): 71-72 WEATHER CONDITIONS: Overcast

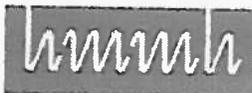
SITE SKETCH: Show roadway, homes, local roads, reference distances, arrows for North & wind direction, where roadway is in cut, at grade, elevated, where direct lines of sight exist.



PHOTOS: _____ GPS COORDINATES: _____



M2



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County

JOB NO.: 306780.010 (VDOT UPC 5559)

MEASUREMENT SITE NO.: M2

PERSONNEL: cjb/zfw

ADDRESS/DESCRIPTION: 6828 Rolling Rd

DATE: 9/26/16

#	L Minute Period Starting	Meas'd Leq (dBA)	✓ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	13:56	63.4						
2	57	57.6						
3	58	60.9						
4	59	60.6						
5	14:00	62.8						
6	14:01	59.4						
7	02	57.3						
8	03	60.8						
9	04	59.2						
10	05	61.5					05:10 to 06:00 fast airplane	
11	06	61.7						
12	07	60.4					07:35 CJB discussion w/resident	
13	08	59.2					to 08:45	
14	09	61.3					09:07 car starting ~75'	
15	10	60.3	✓				10:28 screen to 11:52	
16	11	60.3	✓				10:32 to 11:44 garbage truck	(Centore coldsac)
17	12	61.2					~11:00, beeping truck	
18	13	62.1						
19	14	61.4						
20	15	61.6					15:20 airplane to 16:00	
21	16	63.5					16:35 woman walking to car	
22	17	62.0					17:23 to 18:00 car start/idle	~50'
23	18	65.3					↳ 18:05 to 18:20 idle at intersection	
24	19	57.2						
25	20	65.3						
26	21	58.7					21:50 Airplane to 22:40	
27	22	62.1					↳ peak @ 22:29	
28	23	59.0						
29	24	62.9					24:25 Airplane to 25:35	
30	25	59.5						

114.3
+0.3

(Centore coldsac)

~50'

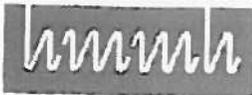
TOTAL Leq =

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: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

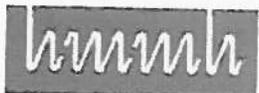
TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: 13:56
 MEASUREMENT SITE NO.: M2 END TIME: _____
 ADDRESS/DESCRIPTION: ASHFORD CT DATE: 9/26/2016
 PERSONNEL: CJB/ZFW

ROADWAY:		DIRECTION 1:	DIRECTION 2:
<u>ROLLING ROAD</u>		<u>SB</u>	<u>NB</u>
First Sample: <u>5</u> minutes		<u>(NEAR)</u>	<u>(FAR)</u>
Start Time: <u>13:59</u>	Automobiles	<u>33</u>	_____
	Medium Trucks (6 Tires)	<u>1</u>	_____
	Heavy Trucks (>6 Tires)	<u>0</u>	_____
	Average speed (mph)	_____	_____
Second Sample: <u>5</u> minutes			
Start Time: <u>14:05</u>	Automobiles	_____	<u>48</u>
	Medium Trucks (6 Tires)	_____	<u>2</u>
	Heavy Trucks (>6 Tires)	_____	<u>1</u>
	Average speed (mph)	_____	_____
Third Sample: <u>5</u> minutes			
Start Time: <u>14:11</u>	Automobiles	<u>32</u>	_____
	Medium Trucks (6 Tires)	<u>2</u>	_____
	Heavy Trucks (>6 Tires)	<u>0</u>	_____
	Average speed (mph)	_____	_____
Fourth Sample: <u>5</u> minutes			
Start Time: <u>14:17</u>	Automobiles	_____	<u>36</u>
	Medium Trucks (6 Tires)	_____	<u>1</u>
	Heavy Trucks (>6 Tires)	_____	<u>0</u>
	Average speed (mph)	_____	_____
	<u>BUS</u>		<u>3</u>

28-33-35
MMH

31-38
MPH

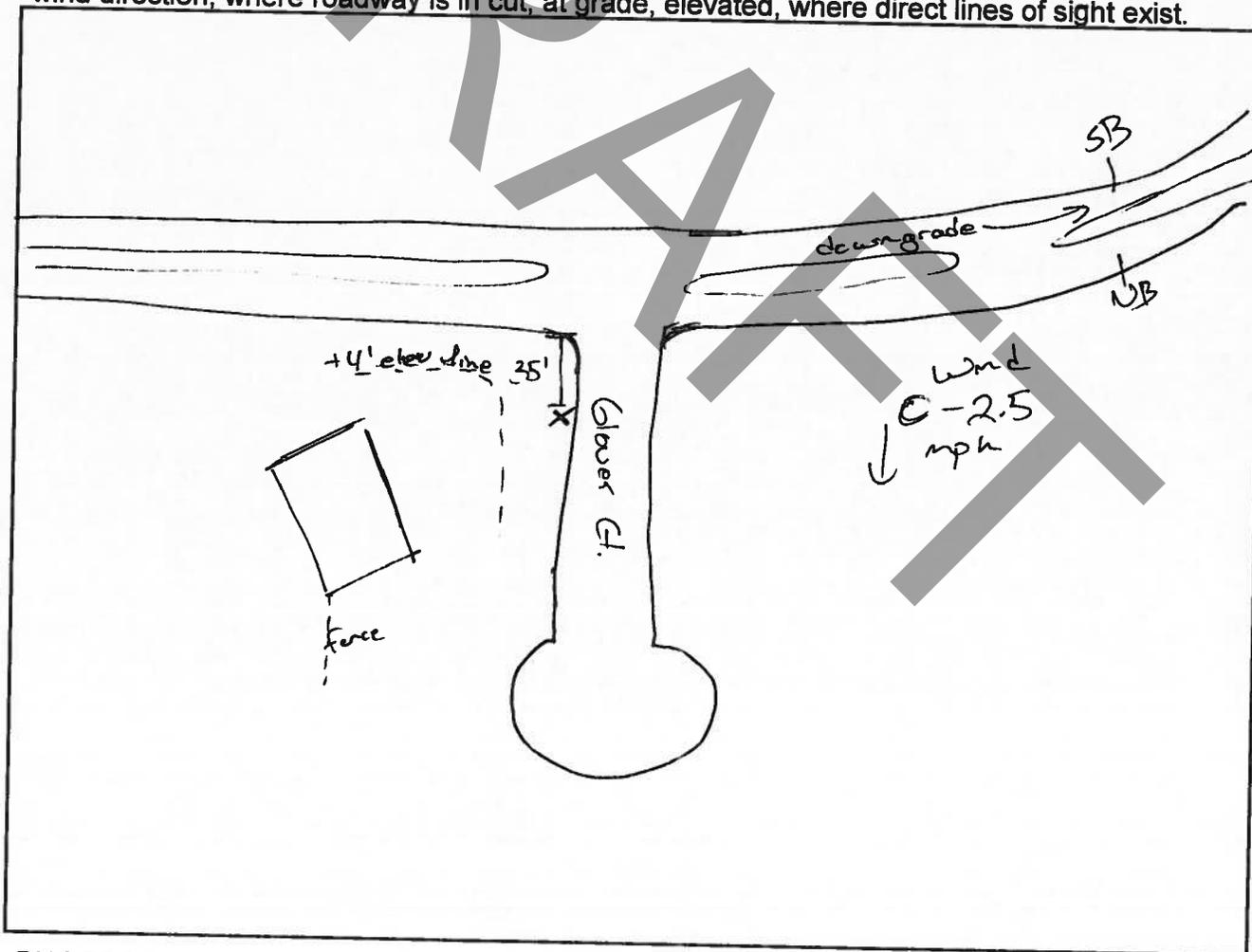


PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: M3
 ADDRESS: 6817 Rolling Road
 OWNER: _____
 DESCRIPTION: _____
 NOISE SOURCES: Airplanes (vary difficult to hear), Insects, Birds
 NOISE MONITOR: LD 820 #1 S/N: 1212
 MICROPHONE: GRAS 40A0/LD PRM828 S/N: 28851/1906
 CALIBRATOR: CAL 250 S/N: 7367
 TEMP. RANGE (°F): 70-72 WEATHER CONDITIONS: Overcast

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: _____



M3



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County

JOB NO.: 306780.010 (VDOT UPC 5559)

MEASUREMENT SITE NO.: M3

PERSONNEL: cjb/zfw

ADDRESS/DESCRIPTION: 6817 Rolling Rd

DATE: 9/26/16

#	1 Minute Period Starting	Meas'd Leq (dBA)	✓ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	3:49	61.4						
2	50	64.6					50:50 Airplane to 51:10	(very distant)
3	51	62.5						
4	52	60.2					52:06 Children Playing	
5	53	65.3					53:20 Airplane to 54:00	(faint)
6	54	64.0	1					
7	55	61.3					55:05 Airplane 55:30	(faint)
8	56	63.0						
9	57	63.9						
10	58	62.4					58:26 Squeaky Chassis (Jeep)	
11	59	65.0					59:35 Airplane to indeterminate	(made by traffic)
12	4:00	66.8						
13	01	64.6						
14	02	62.3						
15	03	63.5						
16	04	63.4						
17	05	63.2					05:29 Bird calls	
18	06	65.0					06:35 7FW Sneeze (~30)	
19	07	62.2						
20	08	63.7						
21	09	64.9						
22	10	62.8					10:55 - 11:07: 3 school buses	
23	11	65.5						
24	12	63.7					12:45 to undetermined Airplane	
25	13	69.6	X				12:55 to 14:30 Sirens, Firetruck	
26	14	86.9	X				↳ 14:06 peak 14:57 note	
27	15	65.2						
28	16	64.5						
29	17	63.6						
30	18	63.2						

114.2
40.2

(very distant)

(faint)

(made by traffic)

(~30)

Sirens, Firetruck

note

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: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: 15:49
 MEASUREMENT SITE NO.: M3 END TIME: _____
 ADDRESS/DESCRIPTION: GLOVER CT DATE: 9/26/2016
 PERSONNEL: CJB/ZFW

ROADWAY:		DIRECTION 1:	DIRECTION 2:
		<u>NB</u>	<u>SB</u>
		<u>(NEAR)</u>	<u>(FAR)</u>
First Sample: <u>5</u> minutes Start Time: <u>15:50</u>	<u>ROLLING ROAD</u>	<u>78</u>	_____
	Automobiles	<u>0</u>	_____
	Medium Trucks (6 Tires)	<u>0</u>	_____
	Heavy Trucks (>6 Tires)	<u>0</u>	_____
	Average speed (mph)	<u>1</u>	_____
Second Sample: <u>5</u> minutes Start Time: <u>15:56</u>	<u>MC</u>	_____	<u>50</u>
	Automobiles	_____	<u>0</u>
	Medium Trucks (6 Tires)	_____	<u>0</u>
	Heavy Trucks (>6 Tires)	_____	<u>0</u>
	Average speed (mph)	_____	_____
Third Sample: <u>5</u> minutes Start Time: <u>16:02</u>		<u>67</u>	_____
	Automobiles	<u>0</u>	_____
	Medium Trucks (6 Tires)	<u>0</u>	_____
	Heavy Trucks (>6 Tires)	_____	_____
	Average speed (mph)	_____	_____
Fourth Sample: <u>5</u> minutes Start Time: <u>16:08</u>		_____	<u>67</u>
	Automobiles	_____	<u>1</u>
	Medium Trucks (6 Tires)	_____	<u>0</u>
	Heavy Trucks (>6 Tires)	_____	_____
	Average speed (mph)	_____	<u>3</u>
	<u>BUS</u>		
		<u>28-30 MAH</u>	<u>32-40 MAH</u>

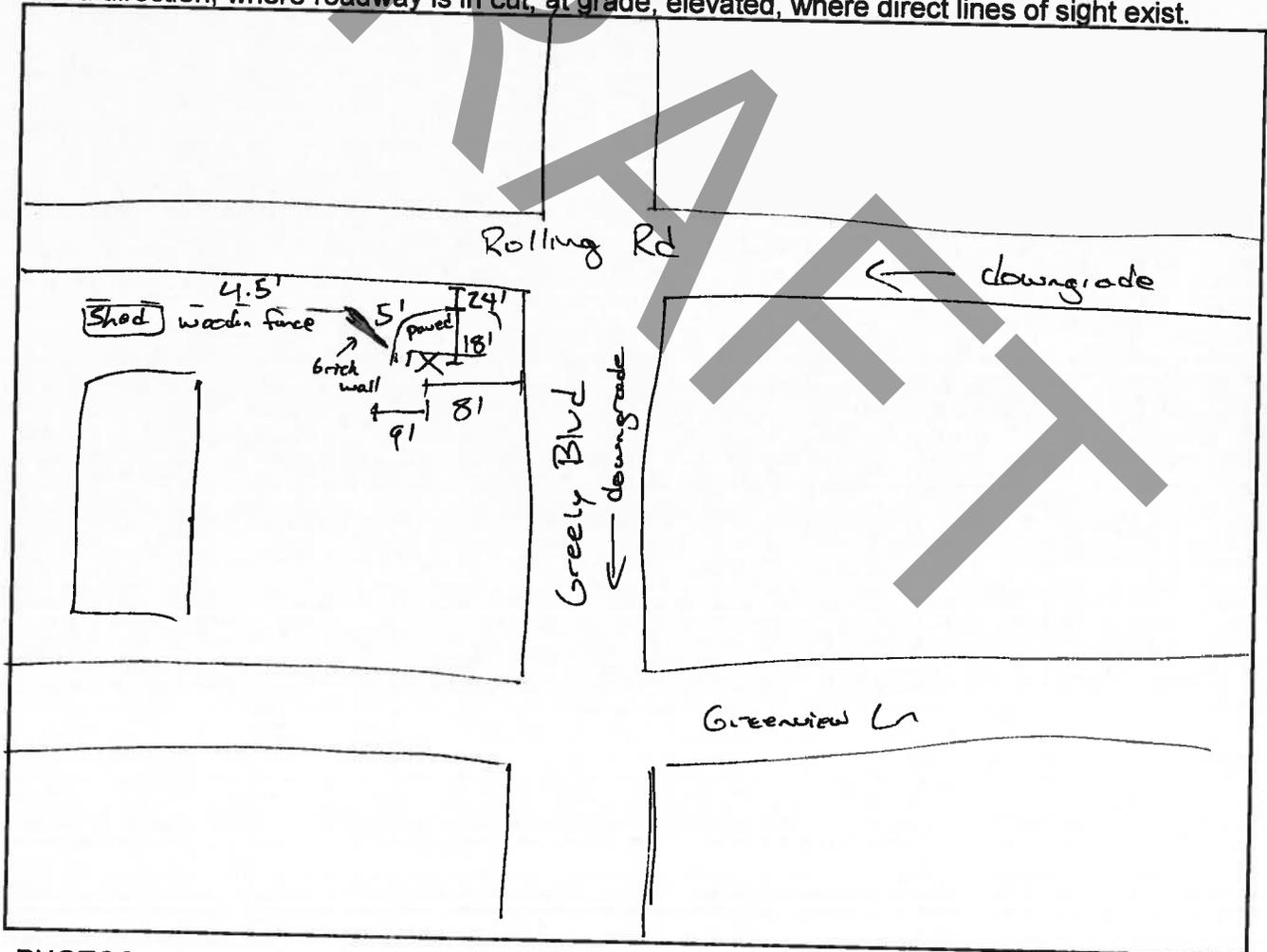


PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
JOB NO.: 306780.010 (VDOT UPC 5559)

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: m4
ADDRESS: 8300 Greely Blvd
OWNER: _____
DESCRIPTION: _____
NOISE SOURCES: Insects, Power Tools
NOISE MONITOR: LD 820 71 S/N: 1212
MICROPHONE: GRAS 40A0 / LDPRM 825 S/N: 25851 / 1906
CALIBRATOR: CAL250 S/N: 2367
TEMP. RANGE (°F): 70-72 WEATHER CONDITIONS: Overcast

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: _____



M4



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County

JOB NO.: 306780.010 (VDOT UPC 5559)

MEASUREMENT SITE NO.: M4

PERSONNEL: cjb/zfw

ADDRESS/DESCRIPTION: 8300 Greeley Blvd

DATE: 9/26/16

#	± Minute Period Starting	Meas'd Leq (dBA)	√ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	16:53	63.9						
2	54	63.5						
3	55	66.0						
4	56	63.5						
5	57	57.6						auto Greenview: 1
6	58	66.5						57:10 chains and? to the
7	59	65.4						" (intermittent)
8	17:00	62.4						"
9	01	65.8						~48 dBA Ambient
10	02	66.4						
11	03	63.8						
12	04	64.2						
13	05	65.9						04:10 CTB resident discuss ~100'
14	06	63.3						
15	07	65.2						
16	08	65.1						
17	09	63.0						
18	10	64.5						
19	11	64.7						
20	12	63.0						
21	13	63.9						12:10-12:25 slight backup
22	14	66.9						13:00 Birds
23	15	65.1						14:10 clipboard drop
24	16	63.4						
25	17	64.9						16:14 People talking ~150'
26	18	68.4						
27	19	61.9						
28	20	66.1						
29	21	66.2						
30	22	66.6						22:10-22:25 firetruck (no sirens)

114.2
+0.2

discuss
~100'

~150'

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 <<

114.2
+0.2



PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: 1653
 MEASUREMENT SITE NO.: M4 END TIME: 9/26/2016
 ADDRESS/DESCRIPTION: GREELEY BLVD DATE: _____
 PERSONNEL: CJB/ZFW

ROADWAY: _____ DIRECTION 1: NB DIRECTION 2: NB
 First Sample: 5 minutes (NEAR) (FAR)
 Start Time: 1655
 Automobiles 54
 Medium Trucks (6 Tires) 1
 Heavy Trucks (>6 Tires) 0
 Average speed (mph) _____

Second Sample: 5 minutes
 Start Time: 17:02
 Automobiles _____ 80
 Medium Trucks (6 Tires) _____ 0
 Heavy Trucks (>6 Tires) _____ 0
 Average speed (mph) _____

Third Sample: 5 minutes
 Start Time: 17:08
 Automobiles 78
 Medium Trucks (6 Tires) 0
 Heavy Trucks (>6 Tires) 0
 Average speed (mph) _____

Fourth Sample: 5 minutes
 Start Time: 17:14
 Automobiles _____ 90
 Medium Trucks (6 Tires) _____ 0
 Heavy Trucks (>6 Tires) _____ 0
 Average speed (mph) _____

26-44
MPH

18-35
MPH

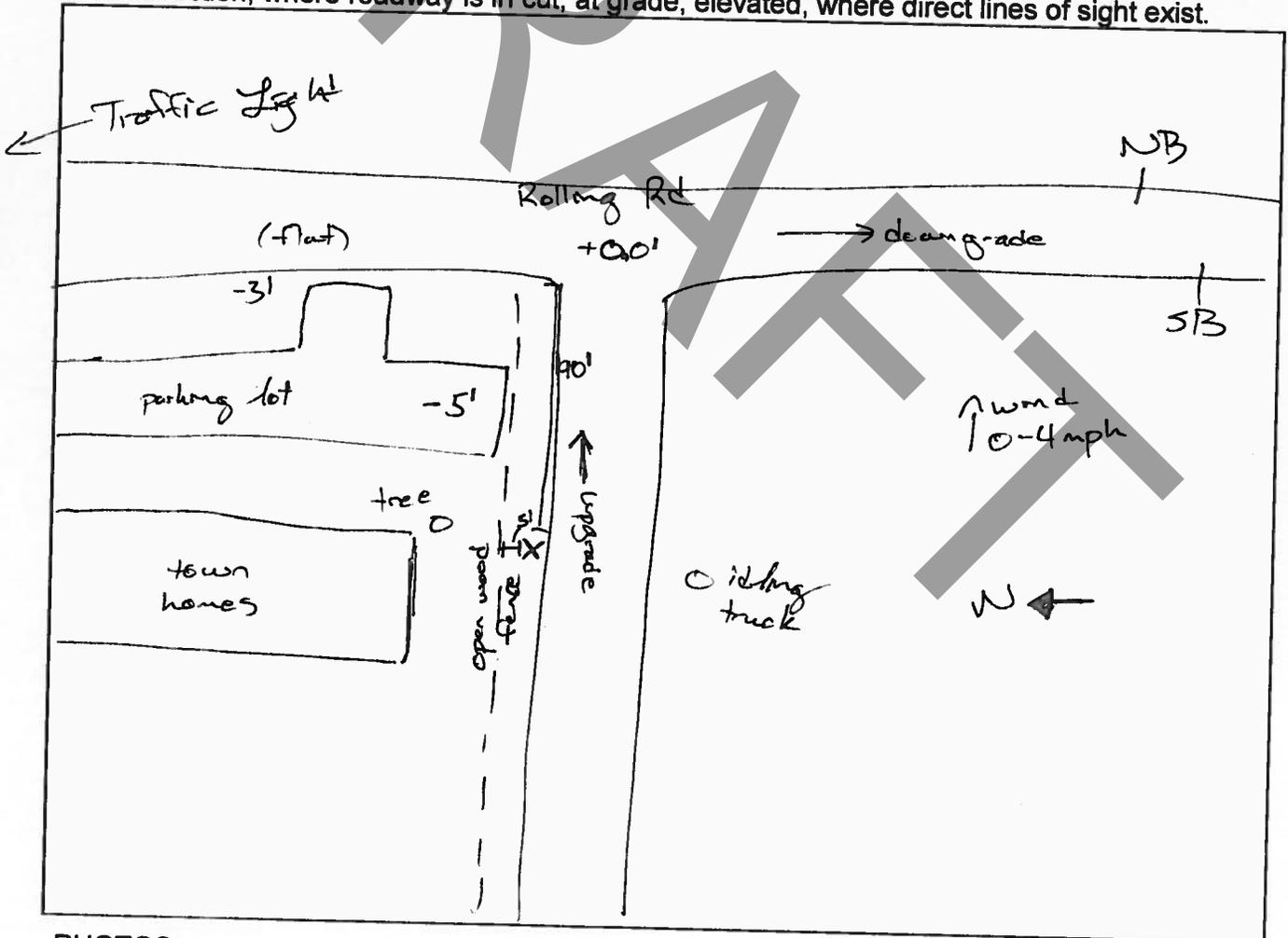


PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

SHORT-TERM NOISE MEASUREMENT SITE LOG

ASSESSMENT AREA: _____ MEASUREMENT SITE NO.: M5
 ADDRESS: 8351 ~~Rolling Rd~~ ^{Regal Oak Ct.}; Kenwood Oaks
 OWNER: _____
 DESCRIPTION: _____
 NOISE SOURCES: Aircraft, Insects, Birds, People
 NOISE MONITOR: LD 820 21 S/N: 1212
 MICROPHONE: GRAS 40A0/LDPRM575 S/N: 25851/1966
 CALIBRATOR: CAL250 S/N: 2367
 TEMP. RANGE (°F): 68-70 WEATHER CONDITIONS: Overcast / Drizzling

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: _____



M5



SHORT-TERM NOISE MEASUREMENT DATA SHEET

PROJECT: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

MEASUREMENT SITE NO.: M5

PERSONNEL: cjb/zfw

ADDRESS/DESCRIPTION: 8351 ~~Yarnwood Ave~~ Regal Oak Ct.

DATE:

#	1 Minute Period Starting	Meas'd Leq (dBA)	✓ or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources	COMMENTS (Include Calibration Data)
1	11:32	57.4						
2	33	56.7						
3	34	57.4						
4	35	57.8					Truck Parked	
5	36	59.4	X					
6	37	58.3	X				idling	36:55 moving recycling bin
7	38	56.8						
8	39	57.2						39:54 bird call
9	40	56.4						
10	41	59.5						
11	42	60.8	✓				41:30 leaves 42:49 honk	
12	43	55.3						
13	44	61.0						
14	45	56.2						
15	46	58.9					car leaving parking lot	
16	47	54.7					45:55 siren	to 46:25
17	48	58.8						
18	49	57.2						
19	50	59.7						
20	51	56.4						
21	52	56.6					51:30 airplane (distant)	to 52:20
22	53	57.9						
23	54	56.9					53:15 idling HT	to 53:22
24	55	56.0					54:00 helicopter	54:20 to 54:45 loud
25	56	57.5						55:30 steady rain
26	57	56.3					56:35 honk (distant)	
27	58	58.5						
28	59	56.6						
29	12:00	56.2						
30	01	58.1						

114.2
+0.2

~48 dBA Ambient
-Sci away - some talking

36:55 moving recycling bin

39:54 bird call

51:30 airplane (distant) to 52:20

53:15 idling HT to 53:22
54:00 helicopter 54:20 to 54:45 loud

55:30 steady rain

56:35 honk (distant)

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: Rolling Road (Rte. 638) Widening, Fairfax County
 JOB NO.: 306780.010 (VDOT UPC 5559)

TRAFFIC VOLUME COUNT DATA SHEET

ASSESSMENT AREA: _____ START TIME: 11:32
 MEASUREMENT SITE NO.: M5 END TIME: 12:02
 ADDRESS/DESCRIPTION: KENWOOD AVE DATE: 9/26/2016
 PERSONNEL: CJB/ZFW

ROADWAY:	DIRECTION 1:	DIRECTION 2:
<u>ROLLING ROAD</u>	<u>SB</u>	<u>NB</u>
First Sample: <u>5</u> minutes	<u>(NEAR)</u>	<u>(FAR)</u>
Start Time: <u>11:33</u>	<u>40</u>	_____
Automobiles	<u>0</u>	_____
Medium Trucks (6 Tires)	<u>0</u>	_____
Heavy Trucks (>6 Tires)	<u>1</u>	_____
Average speed (mph)	<u>BUS</u>	_____
Second Sample: <u>5</u> minutes		
Start Time: <u>11:39</u>	_____	<u>49</u>
Automobiles	_____	<u>0</u>
Medium Trucks (6 Tires)	_____	<u>0</u>
Heavy Trucks (>6 Tires)	_____	_____
Average speed (mph)	_____	_____
Third Sample: <u>5</u> minutes		
Start Time: <u>11:45</u>	<u>36</u>	_____
Automobiles	<u>0</u>	_____
Medium Trucks (6 Tires)	<u>0</u>	_____
Heavy Trucks (>6 Tires)	<u>1</u>	_____
Average speed (mph)	<u>BUS</u>	_____
Fourth Sample: <u>5</u> minutes		
Start Time: <u>11:51</u>	_____	<u>42</u>
Automobiles	_____	<u>1</u>
Medium Trucks (6 Tires)	_____	<u>0</u>
Heavy Trucks (>6 Tires)	_____	_____
Average speed (mph)	_____	_____

30-38 MPH 29-36 MPH
AVG ≈ 34-36

Job#:	306780.010
Name:	Rolling Road
Location:	Springfield, VA
Date:	9/26/2016

NOISE MEASUREMENT SUMMARY

		Measurement data				
Site	Address	Date	Time Start	Duration	Total Leq, Traffic Only dBA	Leq, dBA
M1	8009 Viola St.	26-Sep-16	10:10:02	30	65.4	65.4
M2	6282 Rolling Rd	26-Sep-16	13:56:00	30	67.2	61.5
M3	6817 Rolling Rd	26-Sep-16	15:49:00	30	72.7	63.9
M4	8300 Greely Blvd	26-Sep-16	16:53:00	30	65.1	65.1
M5	8351 Regal Oak Ct	26-Sep-16	11:32:00	30	57.9	57.8

Site Number	M1
Location:	8009 Viola St.
Date:	9/26/2016
Start Time:	10:10
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded	Comment
10:10	65.4	65.4		
10:11	66.4	66.4		
10:12	62.5	62.5		
10:13	65.5	65.5		
10:14	63.3	63.3		
10:15	65.7	65.7		
10:16	61.2	61.2		
10:17	66.5	66.5		
10:18	65.5	65.5		
10:19	66.1	66.1		
10:20	67.3	67.3		
10:21	67.5	67.5		
10:22	68.9	68.9		
10:23	67.5	67.5		
10:24	64.3	64.3		
10:25	61.8	61.8		
10:26	65.1	65.1		
10:27	64.9	64.9		
10:28	66.2	66.2		
10:29	64.8	64.8		
10:30	62.1	62.1		
10:31	64.5	64.5		
10:32	66.1	66.1		
10:33	63.5	63.5		
10:34	66.2	66.2		
10:35	64.6	64.6		
10:36	63.7	63.7		
10:37	63.6	63.6		
10:38	65.8	65.8		
10:39	65.6	65.6		
30 Minute Leq	65.4	65.4	0	

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Lookup	VehType_Lookup	Start_Time	Duration	Count	Speed	
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A		10:12	10	53	31
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_MT		10:12	10	5	31
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_HT		10:12	10	1	31
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A		10:19	10	63	31
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_MT		10:19	10	3	31
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_HT		10:19	10	0	31
Viola Street	EB&WB	A	Viola Street_EB&W	Viola Street_EB&WB_A		10:10	30	10	10
Viola Street	EB&WB	MT	Viola Street_EB&W	Viola Street_EB&WB_MT		10:10	30	0	10
Viola Street	EB&WB	HT	Viola Street_EB&W	Viola Street_EB&WB_HT		10:10	30	0	10

Note: 1 MT added accounting for a bus
 Note: 1 HT added from CJB note

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Speed	Hour_Count	Speed	Total_Count	Percentage
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	10	53	31	318	31	354	90%
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_MT	10	5	31	30	31	354	8%
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_HT	10	1	31	6	31	354	2%
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	10	63	31	378	31	396	95%
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_MT	10	3	31	18	31	396	5%
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_HT	10	0	31	0	0	396	0%
Viola Street	EB&WB	A	Viola Street_EB&W	Viola Street_EB&WB_A	30	10	10	20	10	20	100%
Viola Street	EB&WB	MT	Viola Street_EB&W	Viola Street_EB&WB_MT	30	0	10	0	0	20	0%
Viola Street	EB&WB	HT	Viola Street_EB&W	Viola Street_EB&WB_HT	30	0	10	0	0	20	0%

Site Number	M2
Location:	6282 Rolling Rd
Date:	9/26/2016
Start Time:	13:56
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded	Comment
13:56	63.4	63.4		
13:57	57.8	57.8		
13:58	61.1	61.1		
13:59	60.5	60.5		
14:00	62.7	62.7		
14:01	59.3	59.3		
14:02	57.3	57.3		
14:03	60.8	60.8		
14:04	59.2	59.2		
14:05	61.4	61.4		
14:06	61.7	61.7		
14:07	60.3	60.3		
14:08	59.2	59.2		
14:09	63.0	63.0		
14:10	70.3	58.5	32	Siren (14:10:28 to 14:11:52) & Garbage Truck (14:10:32 to 14:11:44)
14:11	80.3	59.7	51	Siren (14:10:28 to 14:11:52) & Garbage Truck (14:10:32 to 14:11:44)
14:12	61.2	61.2		
14:13	62.1	62.1		
14:14	61.4	61.4		
14:15	61.6	61.6		
14:16	63.5	63.5		
14:17	62.1	62.1		
14:18	65.2	65.2		
14:19	57.3	57.3		
14:20	65.3	65.3		
14:21	58.7	58.7		
14:22	62.2	62.2		
14:23	58.9	58.9		
14:24	63.0	63.0		
14:25	59.4	59.4		
30 Minute Leq	67.2	61.5	83	

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Lookup	VehType_Lookup	Start_Time	Duration	Count	Speed	
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	13:59		10	65	32
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	13:59		10	3	32
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	13:59		10	0	32
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	14:05		10	84	35
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	14:05		10	6	35
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	14:05		10	1	35
Ashford Court	EB	A	Ashford Court_EB	Ashford Court_EB_A	13:56		30	1	10
Ashford Court	EB	MT	Ashford Court_EB	Ashford Court_EB_M	13:56		30	0	10
Ashford Court	EB	HT	Ashford Court_EB	Ashford Court_EB_H	13:56		30	0	10

Note: 3 MTs added accounting for 3 busses

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Speed	Hour_Count	Speed	Total_Count	Percentage
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	10	65	32	390	32	408	96%
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	10	3	32	18	32	408	4%
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	10	0	32	0	0	408	0%
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	10	84	35	504	35	546	92%
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	10	6	35	36	35	546	7%
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	10	1	35	6	35	546	1%
Ashford Court	EB	A	Ashford Court_EB	Ashford Court_EB_A	30	1	10	2	10	2	100%
Ashford Court	EB	MT	Ashford Court_EB	Ashford Court_EB_M	30	0	10	0	0	2	0%
Ashford Court	EB	HT	Ashford Court_EB	Ashford Court_EB_H	30	0	10	0	0	2	0%

Site Number	M3
Location:	6817 Rolling Rd
Date:	9/26/2016
Start Time:	15:49
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded	Comment
15:49	61.2	61.2		
15:50	64.6	64.6		
15:51	62.4	62.4		
15:52	60.2	60.2		
15:53	65.3	65.3		
15:54	63.9	63.9		
15:55	61.3	61.3		
15:56	63.0	63.0		
15:57	63.9	63.9		
15:58	62.3	62.3		
15:59	65.0	65.0		
16:00	66.8	66.8		
16:01	64.7	64.7		
16:02	62.1	62.1		
16:03	63.6	63.6		
16:04	63.3	63.3		
16:05	63.3	63.3		
16:06	64.9	64.9		
16:07	62.2	62.2		
16:08	63.6	63.6		
16:09	64.9	64.9		
16:10	62.8	62.8		
16:11	65.6	65.6		
16:12	63.6	63.6	5	Firetruck Sirens (16:12:55 to 16:14:30)
16:13	70.1	X	60	Firetruck Sirens (16:12:55 to 16:14:30)
16:14	86.8	65.0	37	Firetruck Sirens (16:12:55 to 16:14:30) & Motorcycle (16:14:57)
16:15	65.2	65.2		
16:16	64.5	64.5		
16:17	63.6	63.6		
16:18	63.7	63.7		
30 Minute Leq	72.7	63.9	102	

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Lookup	VehType_Lookup	Start_Time	Duration	Count	Speed
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	15:50		10	145
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	15:50		10	0
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	15:50		10	0
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	15:56		10	117
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	15:56		10	2
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	15:56		10	0
Glover Court	WB	A	Glover Court_WB	Glover Court_WB_A	15:49		30	1
Glover Court	WB	MT	Glover Court_WB	Glover Court_WB_M	15:49		30	0
Glover Court	WB	HT	Glover Court_WB	Glover Court_WB_H	15:49		30	0

Note: 1 Motorcycle was noted but is not included

Note: 1 MT added accounting for a bus

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Speed	Hour_Count	Speed	Total_Count	Percentage
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	10	145	29	870	29	870	100%
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	10	0	29	0	0	870	0%
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	10	0	29	0	0	870	0%
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	10	117	36	702	36	714	98%
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	10	2	36	12	36	714	2%
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	10	0	36	0	0	714	0%
Glover Court	WB	A	Glover Court_WB	Glover Court_WB_A	30	1	10	2	10	2	100%
Glover Court	WB	MT	Glover Court_WB	Glover Court_WB_M	30	0	10	0	0	2	0%
Glover Court	WB	HT	Glover Court_WB	Glover Court_WB_H	30	0	10	0	0	2	0%

Site Number	M4
Location:	8300 Greely Blvd
Date:	9/26/2016
Start Time:	16:53
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded	Comment
16:53	63.9	63.9		
16:54	63.5	63.5		
16:55	66.0	66.0		
16:56	63.4	63.4		
16:57	57.7	57.7		
16:58	66.5	66.5		
16:59	65.4	65.4		
17:00	62.3	62.3		
17:01	65.8	65.8		
17:02	66.4	66.4		
17:03	63.7	63.7		
17:04	64.2	64.2		
17:05	65.9	65.9		
17:06	63.2	63.2		
17:07	65.2	65.2		
17:08	65.1	65.1		
17:09	63.0	63.0		
17:10	64.5	64.5		
17:11	64.7	64.7		
17:12	63.0	63.0		
17:13	64.0	64.0		
17:14	66.9	66.9		
17:15	65.0	65.0		
17:16	63.4	63.4		
17:17	65.1	65.1		
17:18	68.3	68.3		
17:19	61.8	61.8		
17:20	66.1	66.1		
17:21	66.2	66.2		
17:22	68.8	68.8		
30 Minute Leq	65.1	65.1	0	

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Lookup	VehType_Lookup	Start_Time	Duration	Count	Speed
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	16:55		10	132
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	16:55		10	1
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	16:55		10	0
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	17:02		10	170
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	17:02		10	0
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	17:02		10	0
Greeley Blvd	EB&WB	A	Greeley Blvd_EB&WB	Greeley Blvd_EB&WB_A	16:53		30	19
Greeley Blvd	EB&WB	MT	Greeley Blvd_EB&WB	Greeley Blvd_EB&WB_M	16:53		30	0
Greeley Blvd	EB&WB	HT	Greeley Blvd_EB&WB	Greeley Blvd_EB&WB_H	16:53		30	0

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Speed	Hour_Count	Speed	Total_Count	Percentage
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	10	132	35	792	35	798	99%
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	10	1	35	6	35	798	1%
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	10	0	35	0	0	798	0%
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	10	170	27	1020	27	1020	100%
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	10	0	27	0	0	1020	0%
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	10	0	27	0	0	1020	0%
Greeley Blvd	EB&WB	A	Greeley Blvd_EB&WB	Greeley Blvd_EB&WB_A	30	19	10	38	10	38	100%
Greeley Blvd	EB&WB	MT	Greeley Blvd_EB&WB	Greeley Blvd_EB&WB_M	30	0	10	0	0	38	0%
Greeley Blvd	EB&WB	HT	Greeley Blvd_EB&WB	Greeley Blvd_EB&WB_H	30	0	10	0	0	38	0%

Site Number	M5
Location:	8351 Regal Oak Ct
Date:	9/26/2016
Start Time:	11:32
Duration (min):	30

VALIDATION SOUND LEVEL

Time	Overall Leq	Traffic-only Leq	Seconds Excluded	Comment
11:32	57.4	57.4		
11:33	56.7	56.7		
11:34	57.3	57.3		
11:35	57.8	57.8		
11:36	59.4	58.3	10	Resident rolling recycling bin (11:36:55 to 11:37:12)
11:37	58.3	58.8	13	Resident rolling recycling bin (11:36:55 to 11:37:12)
11:38	56.9	56.9		
11:39	57.2	57.2		
11:40	56.4	56.4		
11:41	59.4	59.4		
11:42	60.7	60.7		
11:43	55.2	55.2		
11:44	61.0	61.0		
11:45	56.1	56.1		
11:46	58.9	58.9		
11:47	54.7	54.7		
11:48	58.8	58.8		
11:49	57.3	57.3		
11:50	59.7	59.7		
11:51	56.4	56.4		
11:52	56.6	56.6		
11:53	57.9	57.9		
11:54	56.8	56.8		
11:55	58.0	58.0		
11:56	57.5	57.5		
11:57	56.3	56.3		
11:58	58.5	58.5		
11:59	56.6	56.6		
12:00	56.2	56.2		
12:01	58.0	58.0		
30 Minute Leq	57.9	57.8		

TRAFFIC INPUT

Data Entry Table

Roadway	Direction	VehicleType	Total_Lookup	VehType_Lookup	Start_Time	Duration	Count	Speed
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	11:33		10	76
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	11:33		10	2
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	11:33		10	0
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	11:39		10	91
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	11:39		10	1
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	11:39		10	0
Kenwood Ave	EB&WB	A	Kenwood Ave_EB&WB	Kenwood Ave_EB&WB_A	11:32		30	25
Kenwood Ave	EB&WB	MT	Kenwood Ave_EB&WB	Kenwood Ave_EB&WB_M	11:32		30	0
Kenwood Ave	EB&WB	HT	Kenwood Ave_EB&WB	Kenwood Ave_EB&WB_H	11:32		30	0

Note: 2 MTs added accounting for 2 busses

TNM Input Table

Roadway	Direction	VehicleType	Lookup	Lookup	Total_Duration	Total_Type_Count	Avg_Speed	Hour_Count	Speed	Total_Count	Percentage
Rolling Road	SB	A	Rolling Road_SB	Rolling Road_SB_A	10	76	34	456	34	468	97%
Rolling Road	SB	MT	Rolling Road_SB	Rolling Road_SB_M	10	2	34	12	34	468	3%
Rolling Road	SB	HT	Rolling Road_SB	Rolling Road_SB_H	10	0	34	0	0	468	0%
Rolling Road	NB	A	Rolling Road_NB	Rolling Road_NB_A	10	91	33	546	33	552	99%
Rolling Road	NB	MT	Rolling Road_NB	Rolling Road_NB_M	10	1	33	6	33	552	1%
Rolling Road	NB	HT	Rolling Road_NB	Rolling Road_NB_H	10	0	33	0	0	552	0%
Kenwood Ave	EB&WB	A	Kenwood Ave_EB&WB	Kenwood Ave_EB&WB_A	30	25	10	50	10	50	100%
Kenwood Ave	EB&WB	MT	Kenwood Ave_EB&WB	Kenwood Ave_EB&WB_M	30	0	10	0	0	50	0%
Kenwood Ave	EB&WB	HT	Kenwood Ave_EB&WB	Kenwood Ave_EB&WB_H	30	0	10	0	0	50	0%

APPENDIX E 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.

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COMMONWEALTH of VIRGINIA

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

Charles A. Kilpatrick, P.E.
Commissioner

November 10, 2016

MEMORANDUM

TO: Hamid Misaghian PE, Project Manager
Bryan Campbell, Environmental Contact

FROM: LJ Muchenje PE, Noise Abatement

SUBJECT: Rt. 638 (Rolling Road) - Widen to four lanes (UPC 5559)

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, 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 project 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) 371-6768. 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 horizontal alignment for this project was developed with the intent to minimize impacts to the residential properties adjacent to the roadway. The current horizontal alignment and design, arrived through an alternative analysis study and public input, provides the best solution to meet this goal. Shifting the horizontal alignment will create undesirable impacts such as increase right-of-way acquisition, temporary/permanent easements, and increase in disturbance to residential property.

The vertical alignment for this project was developed with the intent of minimizing impacts to residential property, reducing existing driveway grades to within acceptable limits, and tying into the existing closed drainage system. Placing the roadway in a deep cut is not feasible given that it would result in unacceptably high grades on the residential driveways and not provide adequate outfalls for the proposed drainage system. (Tyler Long, Whitman Requardt & Associates)

Comment: Can the project support the use of low noise pavement in lieu of construction of noise walls or sound barriers?

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.

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

Response: Landscaping can be used as a visual screen if it is required. The landscaping must be placed such that it does not decrease driver sight distance and not require additional right of way. (Tyler Long, Whitman Requardt & Associates)

Note: Please provide the name of each responder.

APPENDIX F WARRANTED, FEASIBLE AND REASONABLE WORKSHEETS

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

DRAFT

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	A
Community Name and/or CNE#	A
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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?	No
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)	2,158 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)	108 ft
b. Height range of the proposed noise barrier. (ft)	20 ft
c. Average height of the proposed noise barrier. (ft)	20 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$66,898
f. Barrier Material	NA

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:

**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:	23-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	C1
Community Name and/or CNE#	C - North of Rivington Road
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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?	No
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)	3,756 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.	2
d. Total number of benefited receptors.	3
e. Surface Area per benefited receptor unit. (ft ² /BR)	1,252 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)	313 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$116,436
f. Barrier Material	NA

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:

**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:	23-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	C2
Community Name and/or CNE#	C - South of Rivington Road
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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:	12
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	12
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?	No
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)	17,563 SF
b. Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	12
c. Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	7
d. Total number of benefited receptors.	19
e. Surface Area per benefited receptor unit. (ft ² /BR)	924 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)	1,458 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$544,453
f. Barrier Material	NA

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:

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	D
Community Name and/or CNE#	D - Rhygate
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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?	No
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)	4,491 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.	10
d. Total number of benefited receptors.	13
e. Surface Area per benefited receptor unit. (ft ² /BR)	345 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)	374 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$139,221
f. Barrier Material	NA

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:

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	F
Community Name and/or CNE#	F
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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?	No
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)	6,042 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.	3
d. Total number of benefited receptors.	5
e. Surface Area per benefited receptor unit. (ft ² /BR)	1,208 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)	504 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$187,302
f. Barrier Material	NA

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:

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	G
Community Name and/or CNE#	G
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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):	4
c.	Percentage of impacted receptor units receiving 5 dB(A) or more IL	57%
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?	No
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)	6,404 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.	1
d. Total number of benefited receptors.	5
e. Surface Area per benefited receptor unit. (ft ² /BR)	1,281 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)	534 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$198,524
f. Barrier Material	NA

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:

A noise barrier is not feasible for three impacted receptors (G-020, G-024, and G-028) due to the need to maintain driveway access between these residences and the improved Rolling Road.

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	H
Community Name and/or CNE#	H
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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:	9
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	9
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?	No
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)	12,170 SF
b. Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	9
c. Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	1
d. Total number of benefited receptors.	10
e. Surface Area per benefited receptor unit. (ft ² /BR)	1,217 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)	1,014 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$377,270
f. Barrier Material	NA

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:

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	J
Community Name and/or CNE#	J
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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?	No
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)	12,197 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.	0
d. Total number of benefited receptors.	10
e. Surface Area per benefited receptor unit. (ft ² /BR)	1,220 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)	1,014 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$378,107
f. Barrier Material	NA

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:

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	N
Community Name and/or CNE#	N
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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:	9
b.	Number of impacted receptor units receiving 5 dB(A) or more insertion loss (IL):	9
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?	No
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)	10,945 SF
b. Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	9
c. Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more.	10
d. Total number of benefited receptors.	19
e. Surface Area per benefited receptor unit. (ft ² /BR)	576 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)	912 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$339,295
f. Barrier Material	NA

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:

**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:	16-Nov-16
Project No. and UPC:	VDOT Project No. 0638-029-156 and UPC 5559
County:	Fairfax County
District:	Northern Virginia
Barrier System ID:	O
Community Name and/or CNE#	O
Noise Abatement Category(s)	B
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).	NA
b.	Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI):	NA
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?	No
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)	10,472 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.	2
d. Total number of benefited receptors.	12
e. Surface Area per benefited receptor unit. (ft ² /BR)	873 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)	874 ft
b. Height range of the proposed noise barrier. (ft)	12 ft
c. Average height of the proposed noise barrier. (ft)	12 ft
d. Cost per square foot. (\$/ft ²)	\$31/SF
e. Total Barrier Cost (\$)	\$324,632
f. Barrier Material	NA

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:
