

Warranted, Feasible, and Reasonable Worksheet

Note: the answers provided in the worksheet may differ between preliminary and final design. This worksheet is available in a protected digital format upon request.

Date:	<u>11/05/2013</u>
Project No. and UPC:	<u>0395-100-722,736; UPC No. 96261, 102437</u>
County:	<u>City of Alexandria</u>
Facility:	<u>Interstate-395</u>
Barrier System ID:	<u>Noise Barriers 4 and 5</u>
Noise Abatement Category(s)	<u>NAC Categories B, C, and E</u>
Community Name and/or CNE#	<u>CNE's 7, 8, 9, 10, and 11</u>

Design phase: Preliminary Design Final Design

Warranted

1. Community Documentation (if applicable)
 - a. Date community was permitted. (Per 23CFR 772 this is the date the building permit was issued). N/A
 - b. Date of approval for the Categorical Exclusion (CE), Record of Decision (ROD), or Finding of No Significant Impact (FONSI): N/A
 - 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 No

2. Criteria requiring consideration of noise abatement
 - a. Project causes design year noise levels to approach or exceed the Noise Abatement Criteria? Yes No
 - b. Project causes a substantial noise increase of 10 dBA or more? Yes No

Feasibility

1. Impacted receptor units
 - a. Number of impacted receptor units: 64
 - b. Number of impacted receptor units receiving 5 dBA or more insertion loss (IL): 59
 - c. Percentage of impacted receptor units receiving 5 dB(A) or more IL 92%
 - d. Is the percentage 50 or greater? Yes No

- 2 Will placement of the noise barrier cause engineering or safety conflicts, e.g. drainage or site distance issues? Yes No
- 3 Will placement of the noise barrier restrict access to vehicular or pedestrian travel? Yes No
- 4 Will placement of the noise barrier conflict with existing utility locations? Yes No

Reasonableness

- 1. Cost-Benefit Factors
 - a. Surface Area (Total square foot) of the proposed noise barrier. (ft²) 85,578 (Barriers 4 and 5)
 - b. Impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more. 59
 - c. Non-impacted noise sensitive receptor(s) receiving 5 dB(A) IL or more. 358
 - d. Total number of benefited receptors. 417
 - e. Surface Area per benefited receptor unit. (ft²/BR) 205
 - 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

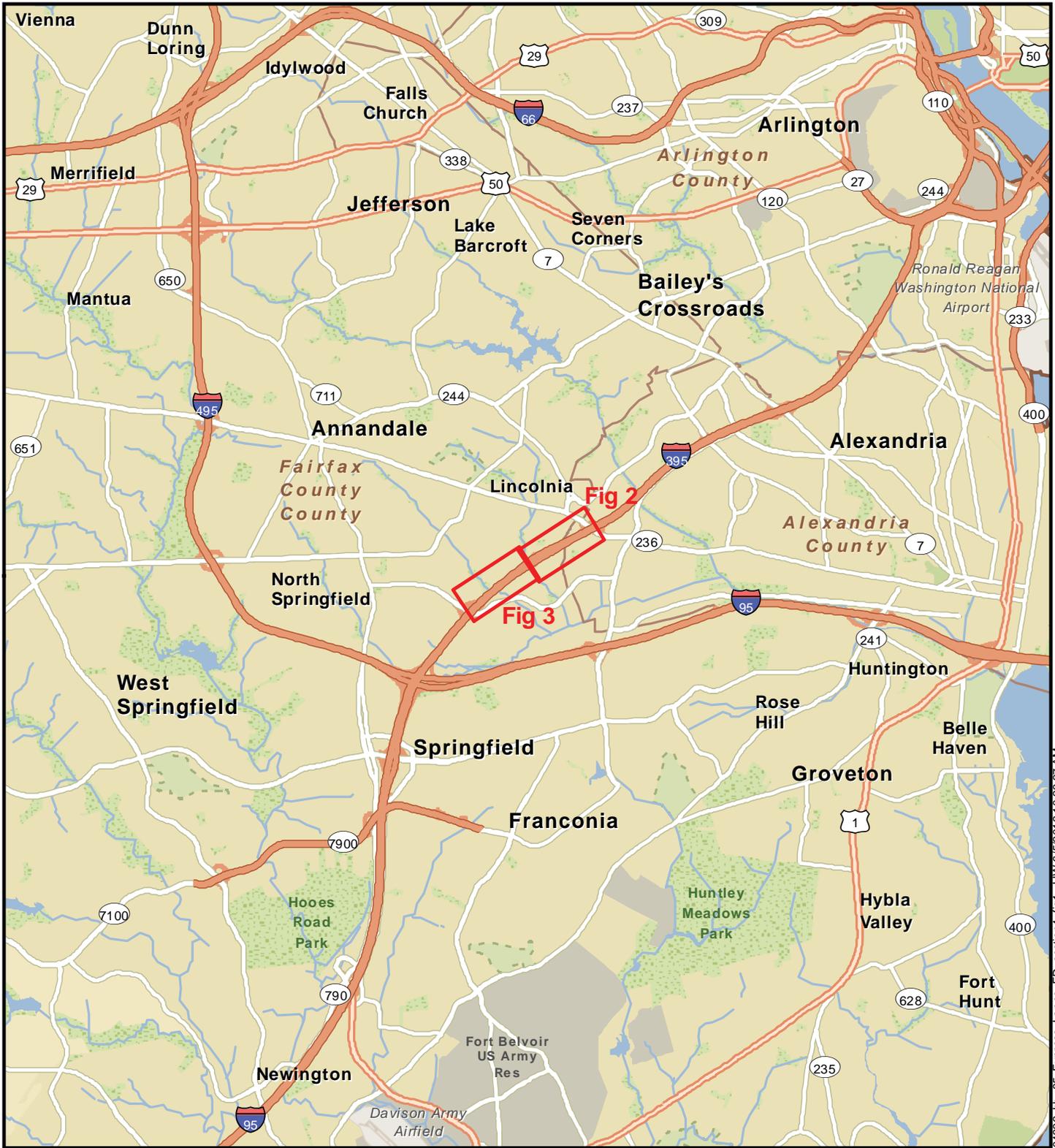
- 2. Community Desires Related to the Barrier
 - a. Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier? If yes, continue to "decision" block. If no, the barrier can be considered not to be reasonable. Proceed to "decision" block and answer "no" to reasonableness question. As the reason for this decision, state that "The majority of the impacted receptor unit owners do not desire the barrier." Yes No

- 3. Additional Noise Barrier Details
 - a. Length of the proposed noise barrier 5,484 (Barriers 4 and 5)
 - b. Height range of the proposed noise barrier 15 - 20
 - c. Average height of the proposed noise barrier 15
 - d. Cost per square foot. (\$/ft²) 37
 - e. Total Barrier Cost (\$) \$3,166,368
 - f. Additional comments (if applicable) _____
 - g. Barrier material Absorptive Reflective

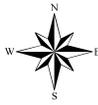
Decision	
Is the Noise Barrier(s) WARRANTED?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Is the Noise Barrier(s) FEASIBLE?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Is the Noise Barrier(s) REASONABLE?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Additional Reasons for Decision: _____	

APPENDIX G – FINAL DESIGN NOISE FIGURES FROM UPC 96261/102437 AND 70849

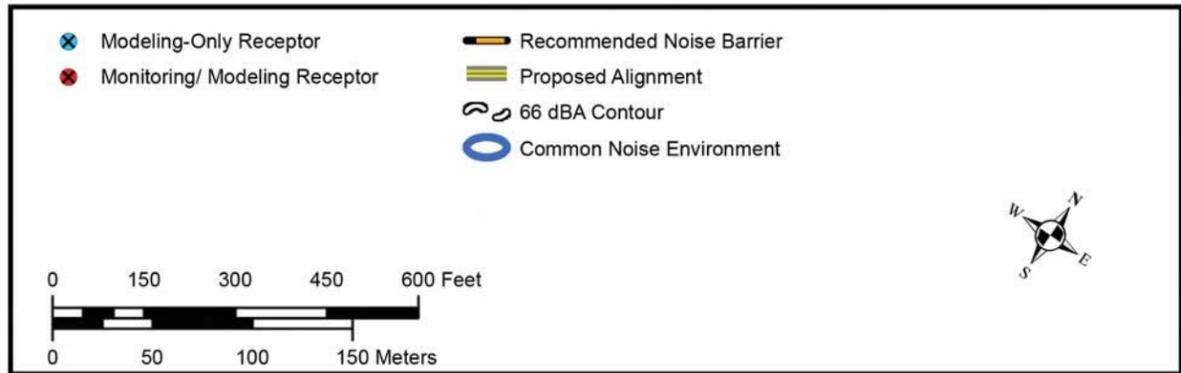
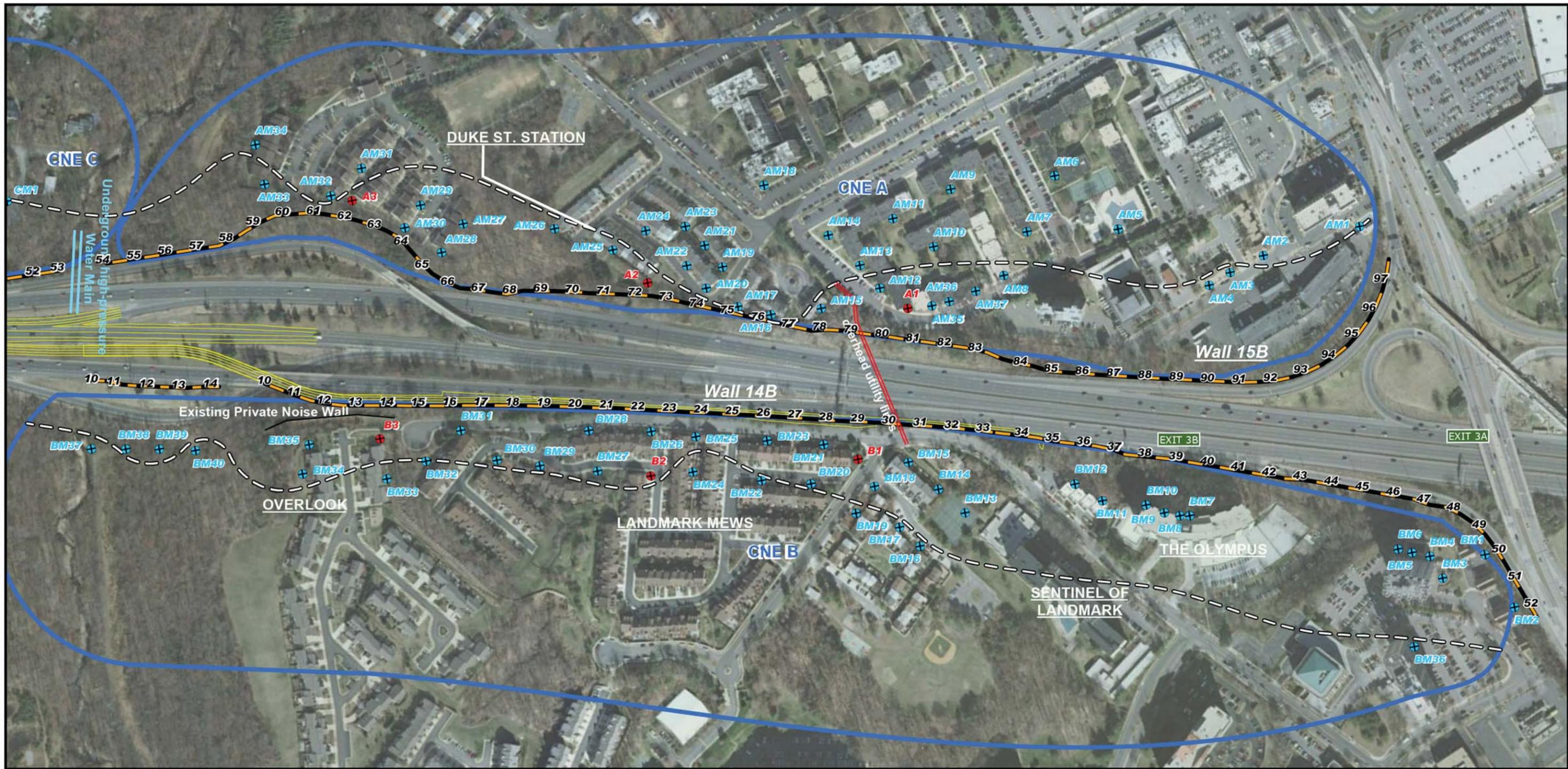
This appendix includes the noise prediction impact and barrier figures for the two final design noise reports that overlap with the current project study area. Figures from the I-95 Express Lanes Project, Segment IV, UPC 70849, are given first, followed by figures from the I-395 HOV Ramp and Auxiliary Lane Project, UPCs 96261 and 102437. The figures for the I-395 HOV Ramp and Auxiliary Lane Project cover the section from Duke Street to Seminary Road and show two barriers currently constructed in the study area, Noise Barriers 1 and 2, as well as two barriers that remain feasible and reasonable in the current study, Noise Barriers 4 and 5.



04332_nb_95_Express_Lanes_FD_sector4_fig1_JJW 6/5/2012 10:23:27 AM


Figure 1 - Regional location map
I-95 HOV Final Design
Fairfax County, Virginia

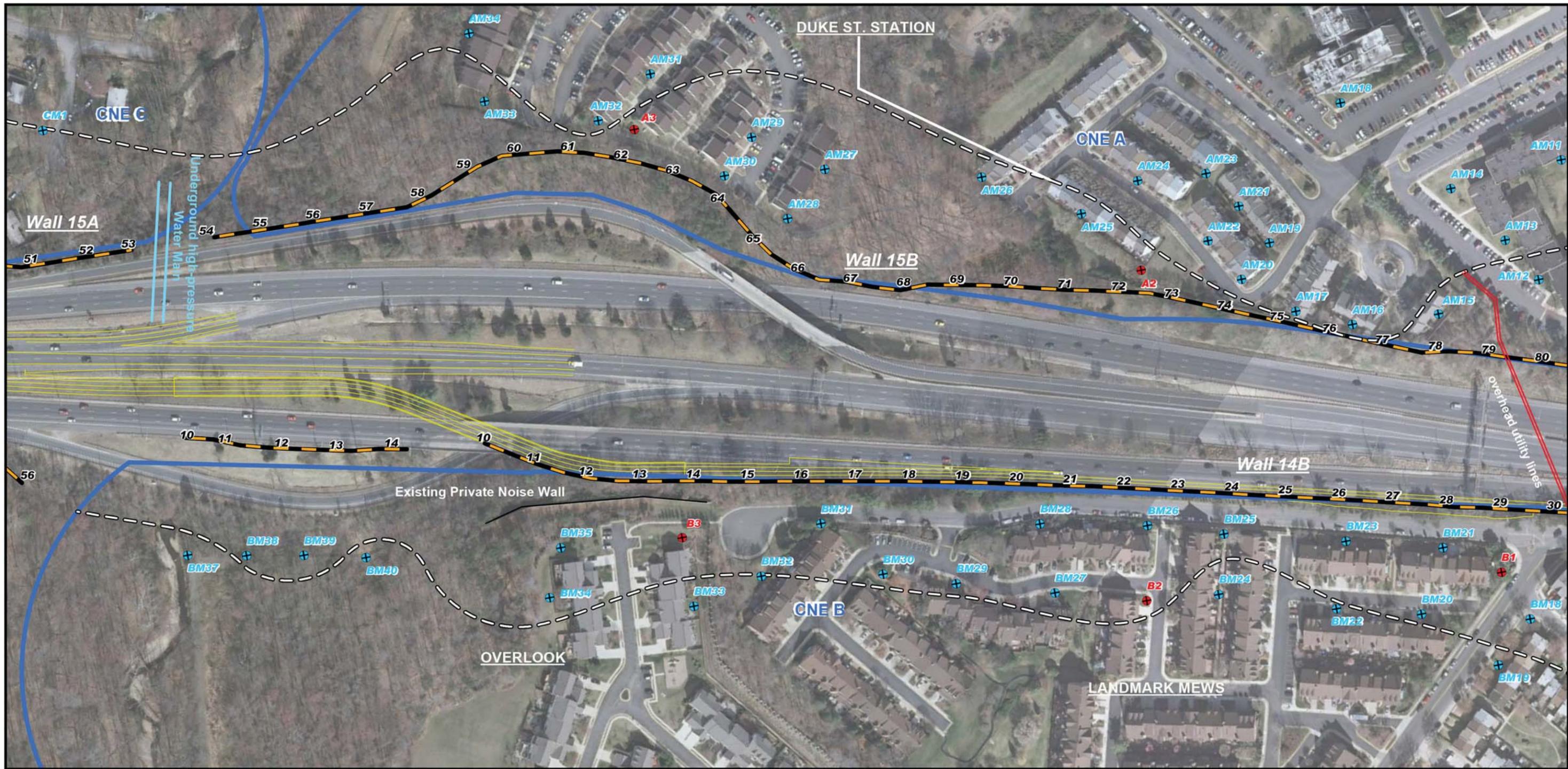

 0 1 2
 Miles



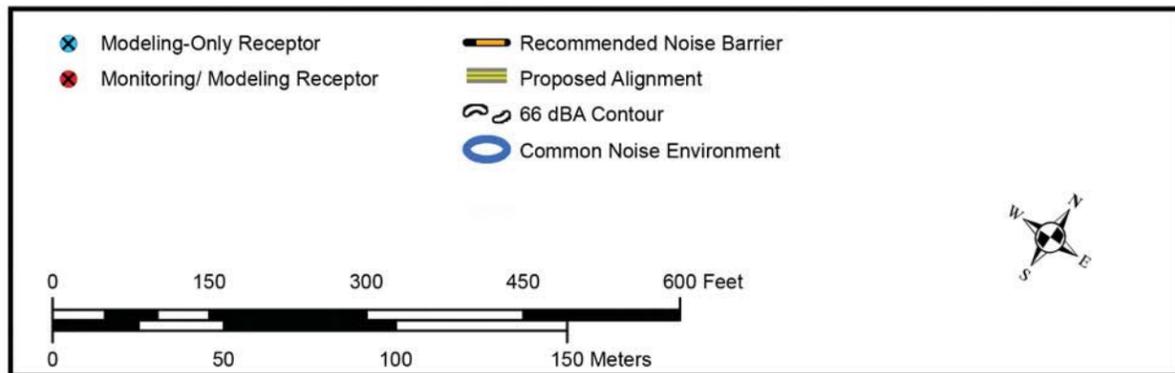
**Virginia Department of Transportation
Interstate 95 – Express Lanes Project**
 State Project No.: 0095-96A-107, PE-101; UPC 70849
 From: I-95 Exit 143 (Garrisonville Road Interchange)
 To: I-395 Exit 3A (Duke Street)
 Section IV

Figure 2

Fairfax, Prince William, and Stafford Counties, Virginia



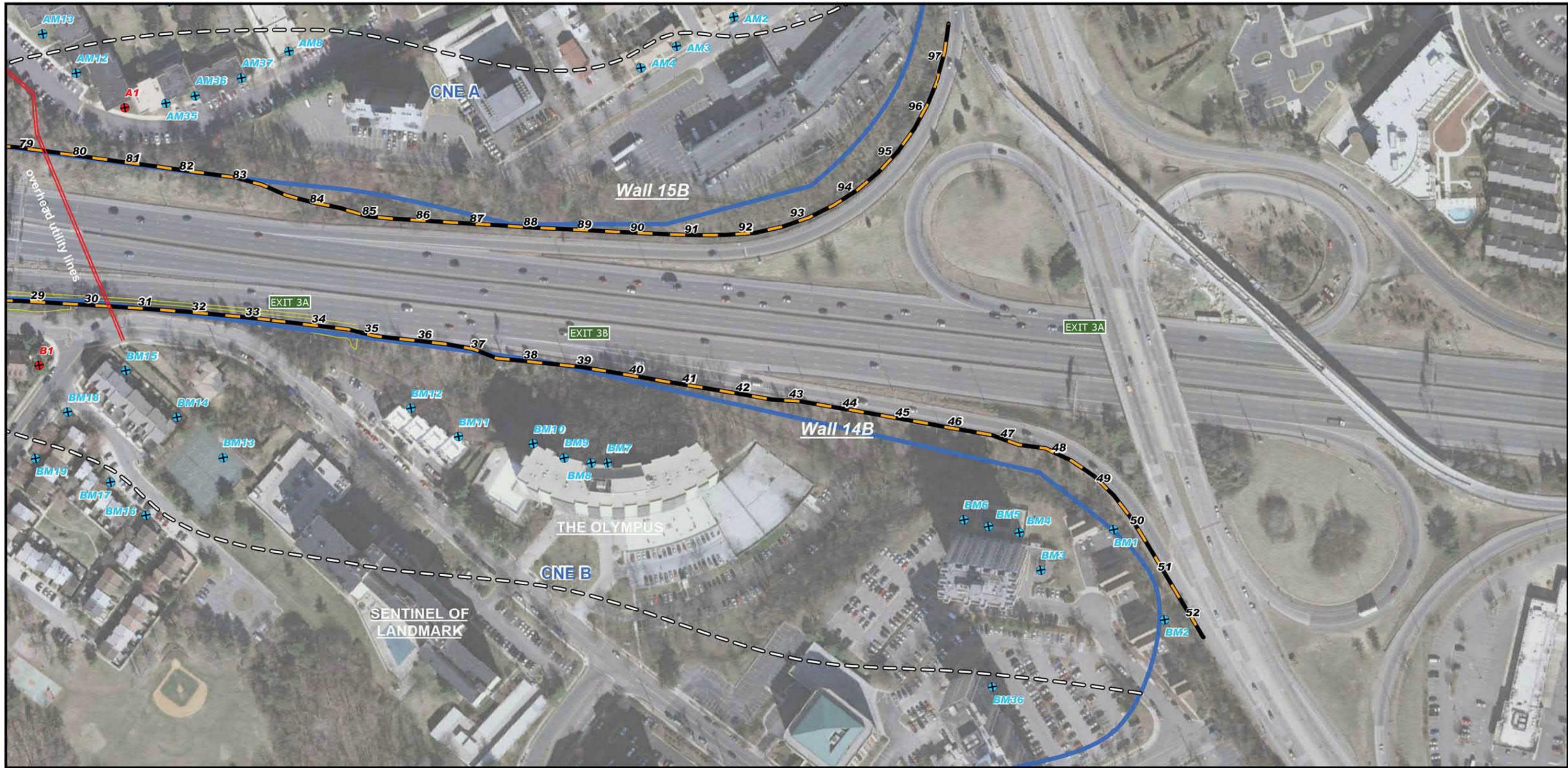
04460 MT-HB 11/13/2012 11:12:14 AM



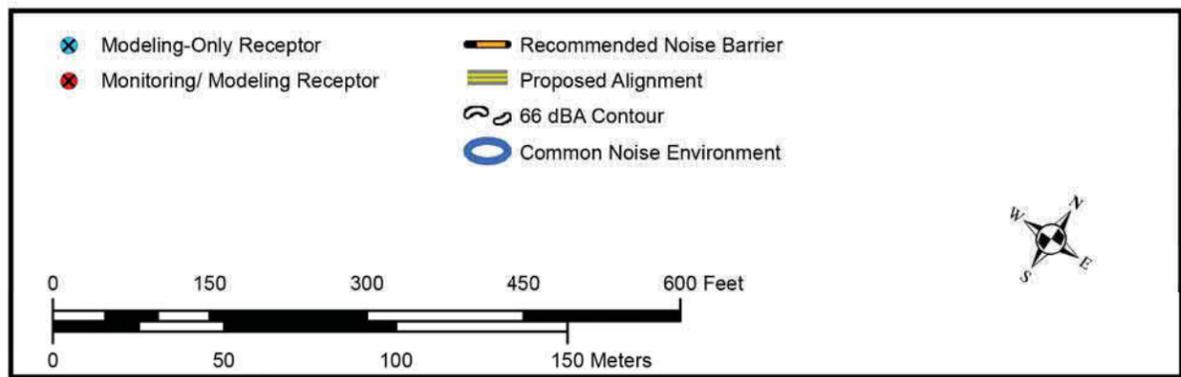
Virginia Department of Transportation
Interstate 95 – Express Lanes Project
 State Project No.: 0095-96A-107, PE-101; UPC 70849
 From: I-95 Exit 143 (Garrisonville Road Interchange)
 To: I-395 Exit 3A (Duke Street)
 Section IV

Figure 2A

Fairfax, Prince William, and Stafford Counties, Virginia



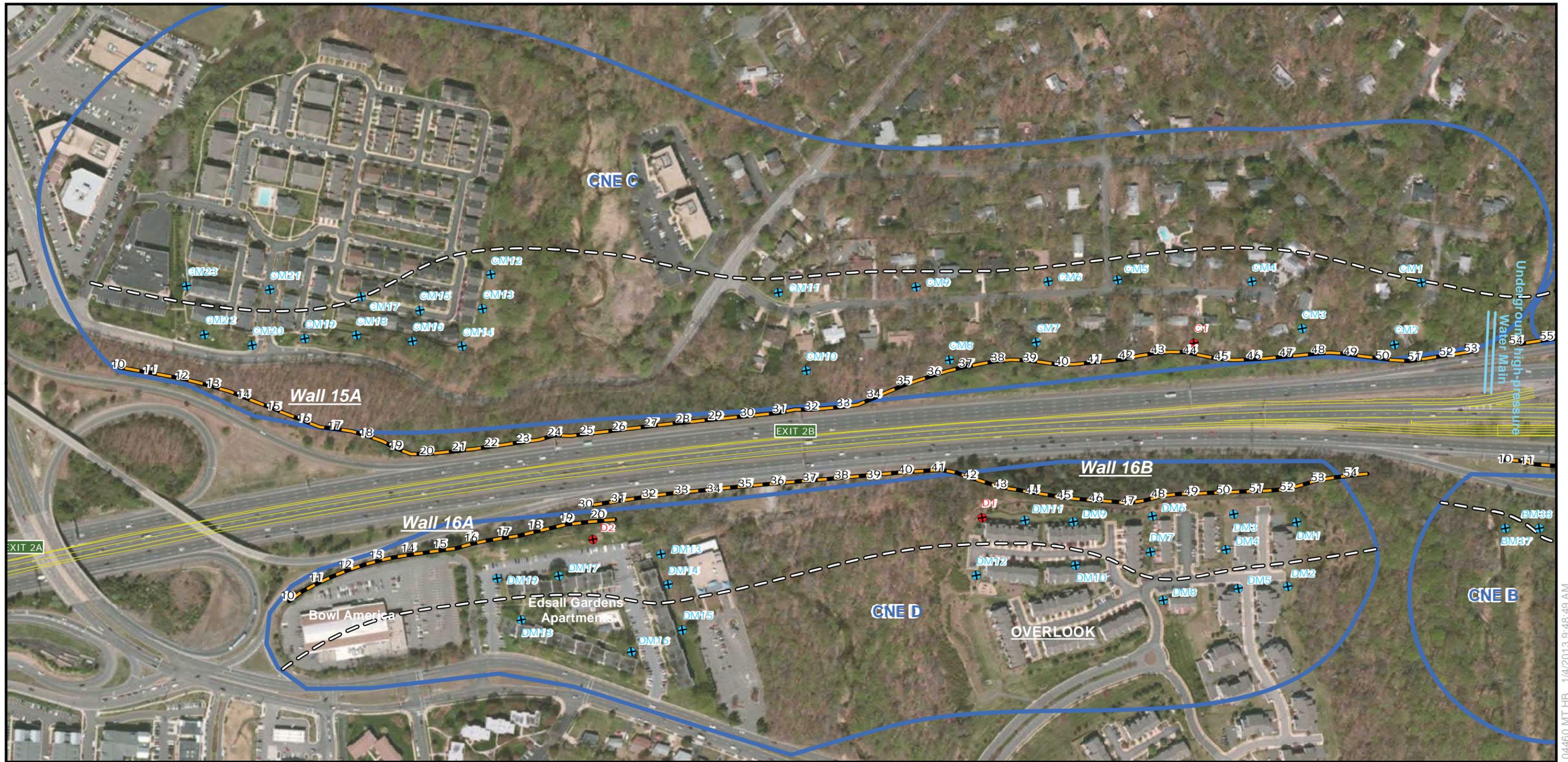
04460 MT-HB 11/13/2012 11:12:14 AM



Virginia Department of Transportation
Interstate 95 – Express Lanes Project
 State Project No.: 0095-96A-107, PE-101; UPC 70849
 From: I-95 Exit 143 (Garrisonville Road Interchange)
 To: I-395 Exit 3A (Duke Street)
 Section IV

Figure 2B

Fairfax, Prince William, and Stafford Counties, Virginia

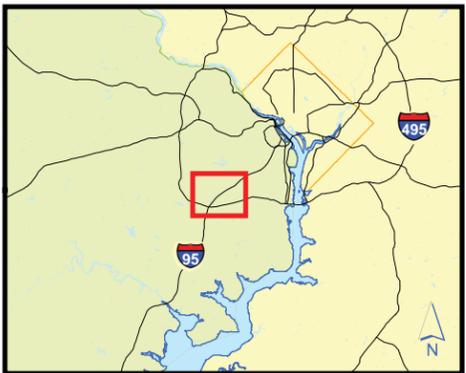


04460 MT HB 1/4/2013 9:48:49 AM

<ul style="list-style-type: none"> Modeling-Only Receptor Monitoring/ Modeling Receptor 	<ul style="list-style-type: none"> Recommended Noise Barrier Proposed Alignment 66 dBA Contour Common Noise Environment
---	---

0 150 300 450 600 Feet

0 50 100 150 Meters



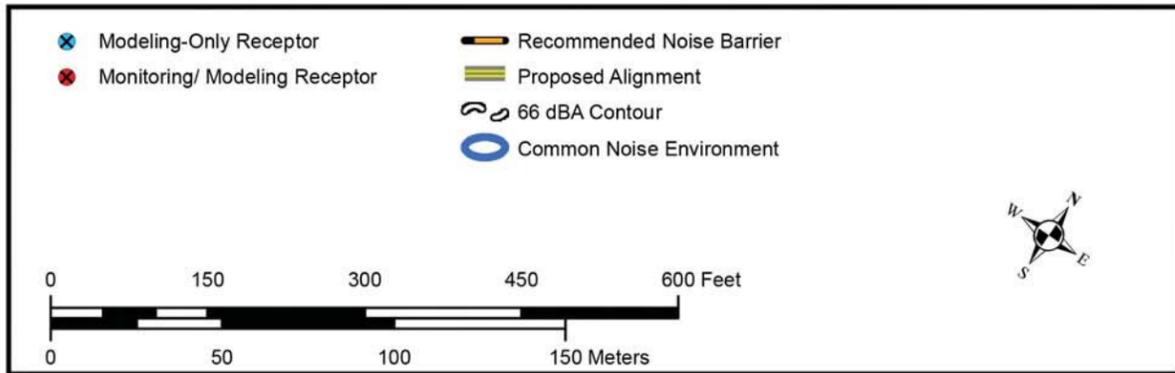
Virginia Department of Transportation
Interstate 95 – Express Lanes Project
 State Project No.: 0095-96A-107, PE-101; UPC 70849
 From: I-95 Exit 143 (Garrisonville Road Interchange)
 To: I-395 Exit 3A (Duke Street)
 Section IV

Figure 3

Fairfax, Prince William, and Stafford Counties, Virginia



04460 MT HB 11/13/2012 11:12:14 AM



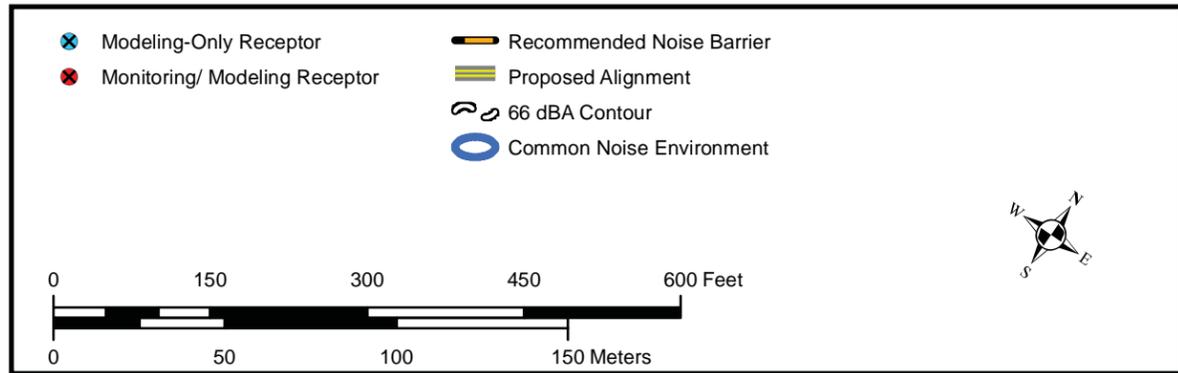
Virginia Department of Transportation
Interstate 95 – Express Lanes Project
 State Project No.: 0095-96A-107, PE-101; UPC 70849
 From: I-95 Exit 143 (Garrisonville Road Interchange)
 To: I-395 Exit 3A (Duke Street)
 Section IV

Figure 3A

Fairfax, Prince William, and Stafford Counties, Virginia



04460 MT HB 1/4/2013 9:48:49 AM



Virginia Department of Transportation
Interstate 95 – Express Lanes Project
 State Project No.: 0095-96A-107, PE-101; UPC 70849
 From: I-95 Exit 143 (Garrisonville Road Interchange)
 To: I-395 Exit 3A (Duke Street)
 Section IV

Figure 3B

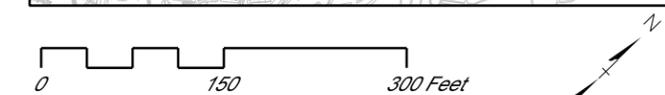
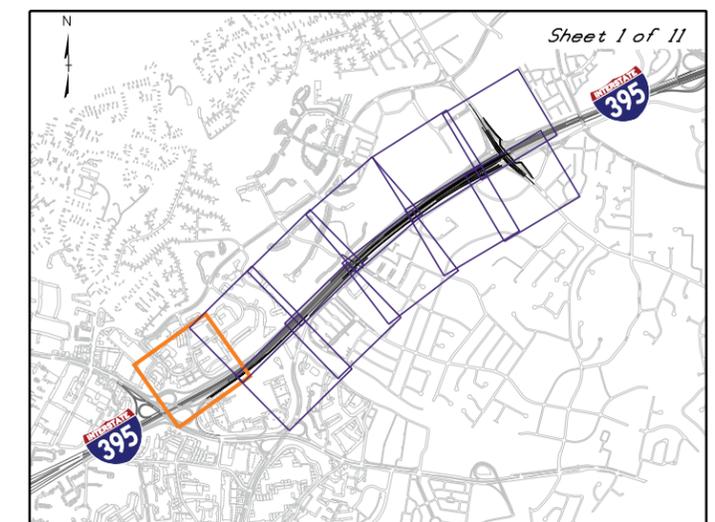
Fairfax, Prince William, and Stafford Counties, Virginia

Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia
 Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- Common Noise Environment (CNE) Areas
- Noise Measurement Site



THIS PAGE INTENTIONALLY LEFT BLANK

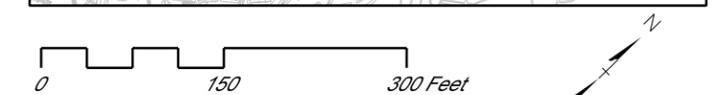
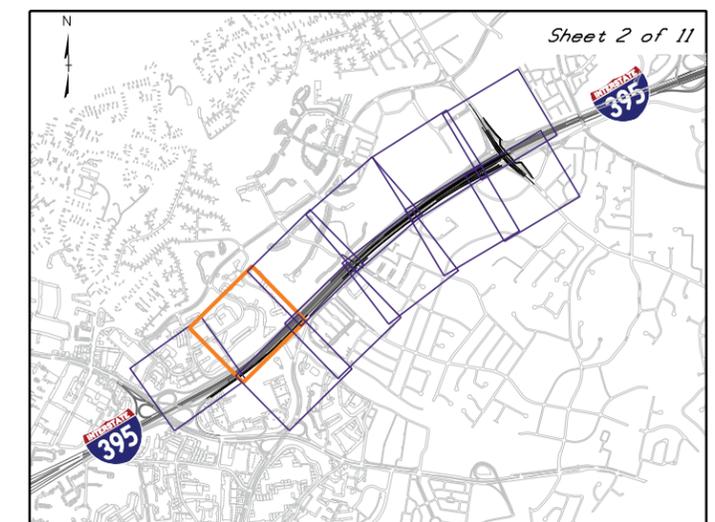
Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia

Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- Common Noise Environment (CNE) Areas
- Noise Measurement Site



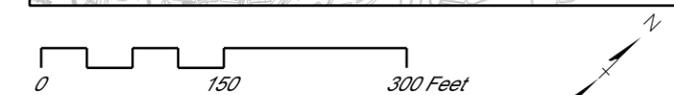
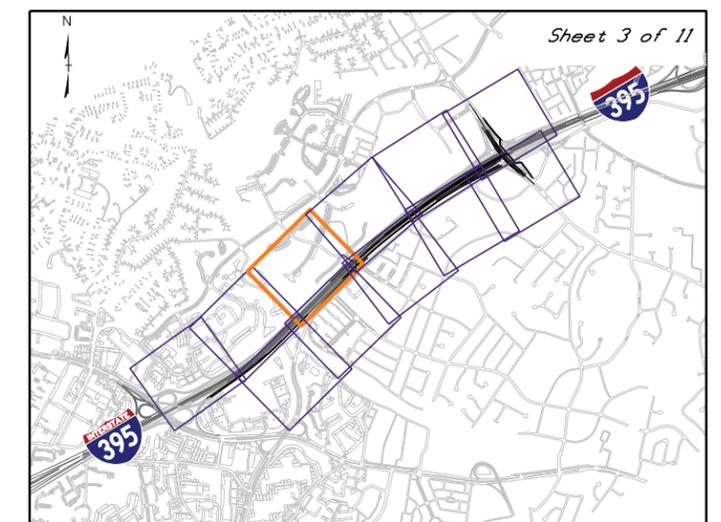
THIS PAGE INTENTIONALLY LEFT BLANK

Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia
 Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- Common Noise Environment (CNE) Areas
- Noise Measurement Site



THIS PAGE INTENTIONALLY LEFT BLANK

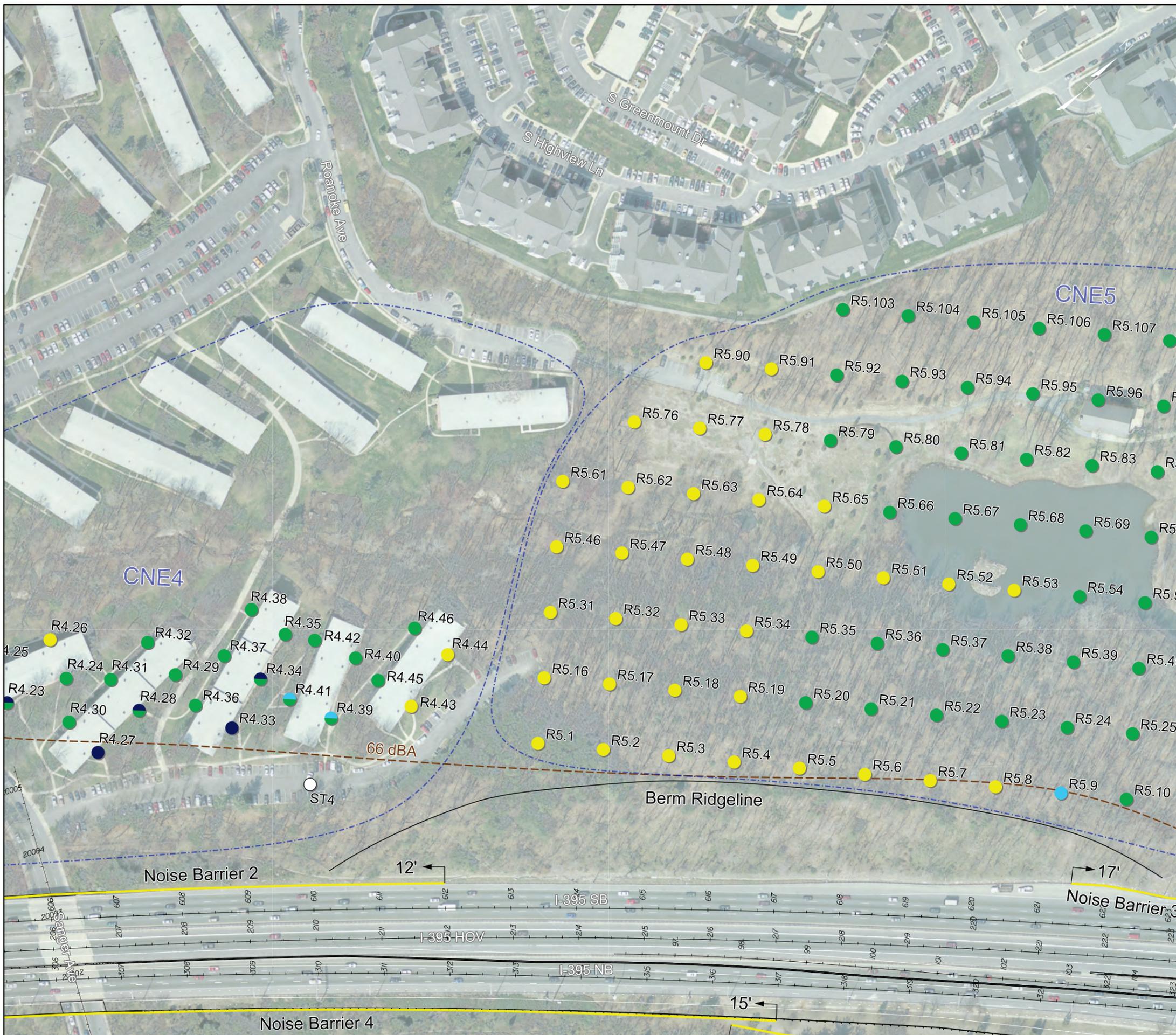
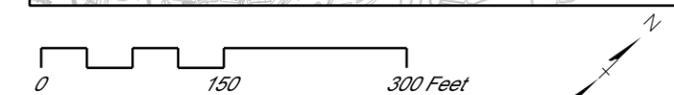
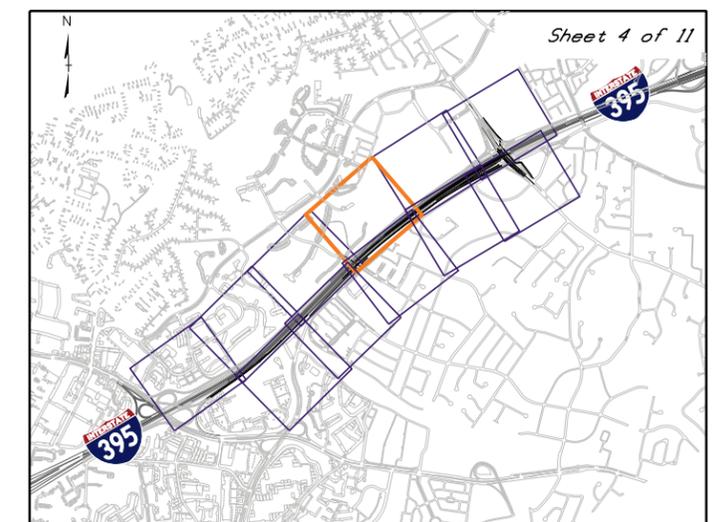
Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia

Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- - - 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- - - Common Noise Environment (CNE) Areas
- Noise Measurement Site



THIS PAGE INTENTIONALLY LEFT BLANK

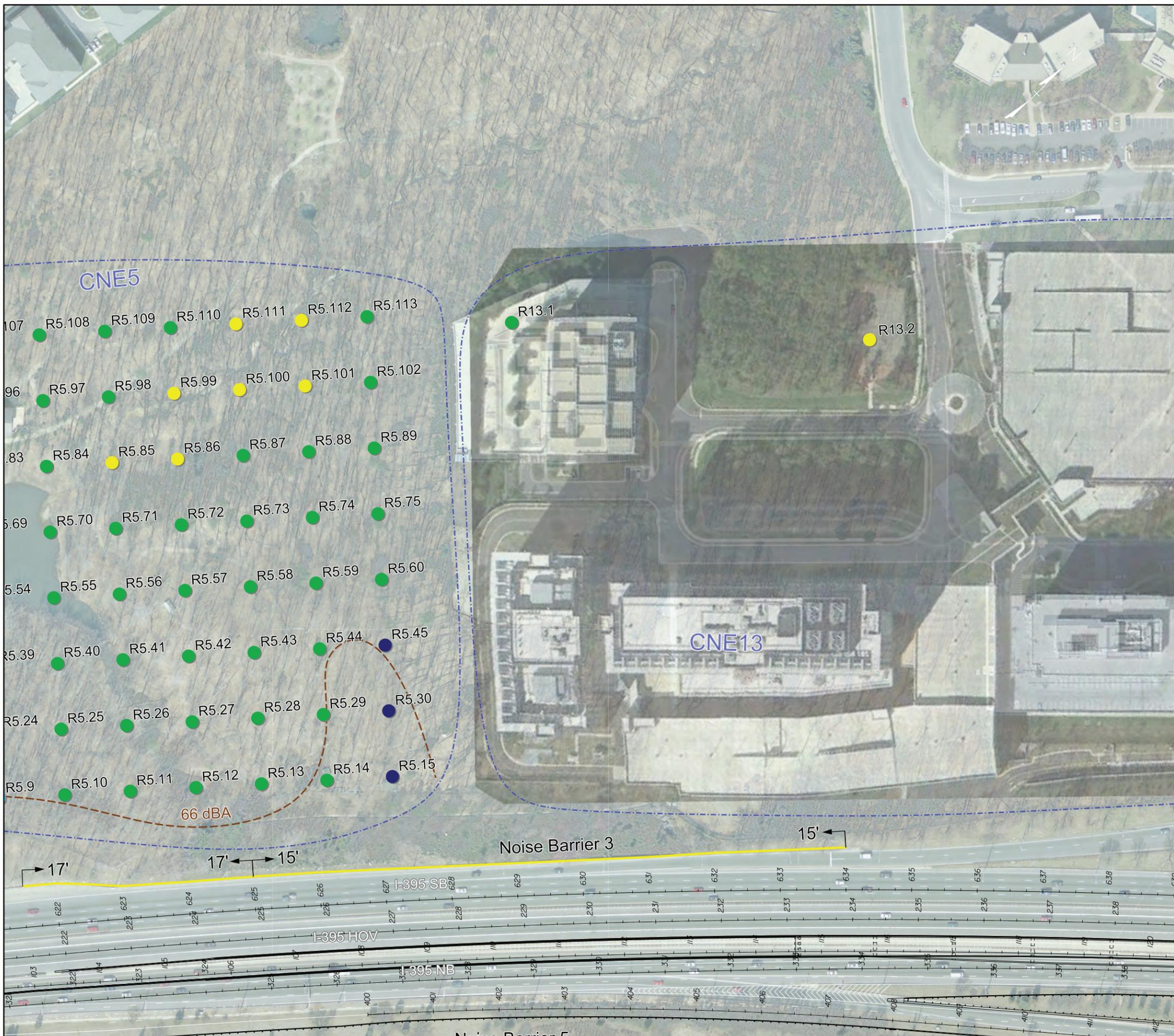
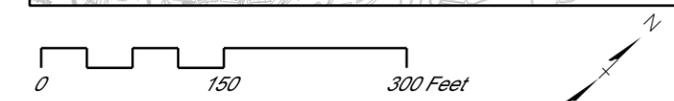
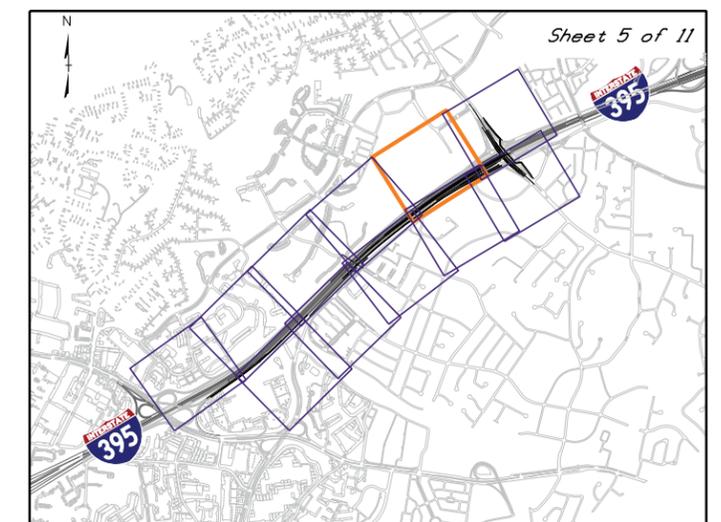
Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia

Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- 66 dBA $L_{eq}(h)$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- Common Noise Environment (CNE) Areas
- Noise Measurement Site



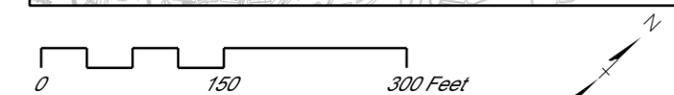
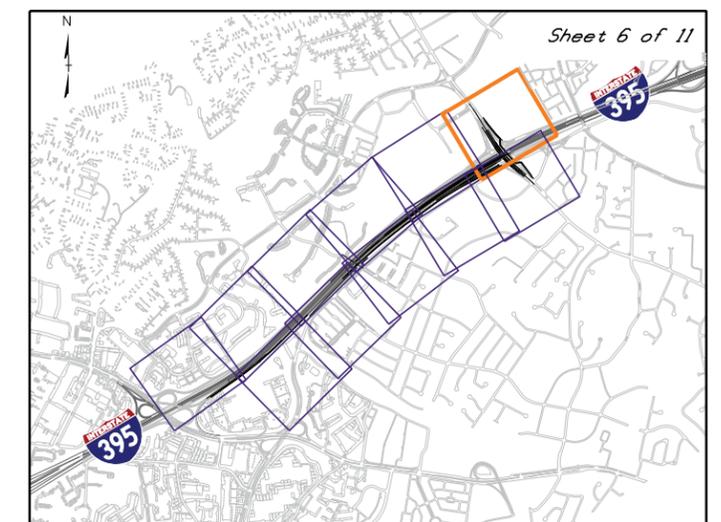
THIS PAGE INTENTIONALLY LEFT BLANK

Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia
 Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- ⊖ Top Floor Noise Prediction Result
- ⊕ Bottom Floor Noise Prediction Result
- ▬ Potential Barrier - Feasible and Reasonable
- - - 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- - - Common Noise Environment (CNE) Areas
- Noise Measurement Site



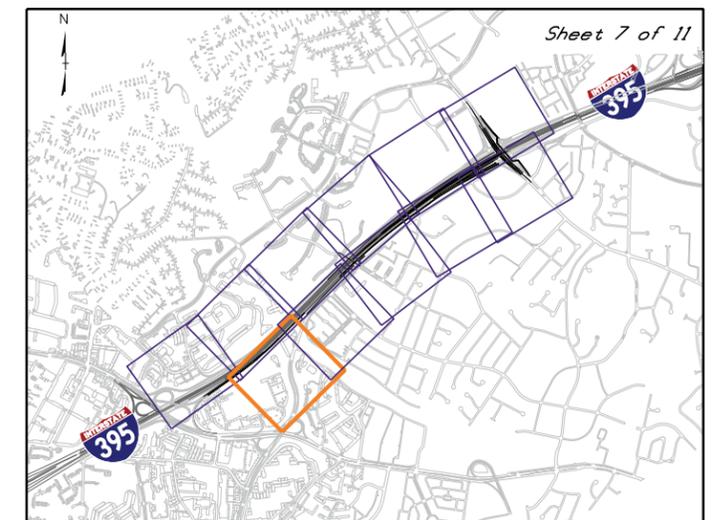
THIS PAGE INTENTIONALLY LEFT BLANK

Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia
 Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- - - 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- - - Common Noise Environment (CNE) Areas
- Noise Measurement Site



THIS PAGE INTENTIONALLY LEFT BLANK

Figure 1
Build Alternative Noise Prediction
Locations/Category and Potential
Noise Barriers

City of Alexandria, Virginia
 Project Number: 0395-100-722, 723, UPC No. 96261, 102437

Receiver Site and Number

- Impacted and Benefited w/ 5 or 6 dB Insertion Loss
- Impacted and Benefited w/ 7 dB or more Insertion Loss
- Impacted and Not Benefited
- Benefited w/ 5 dB or more Insertion Loss
- Not Benefited or Impacted
- Top Floor Noise Prediction Result
- Bottom Floor Noise Prediction Result
- Potential Barrier - Feasible and Reasonable
- - - 66 dBA $L_{eq(h)}$ Ground Floor Noise Contour without Potential Barriers in Residential and Recreational Areas
- - - Common Noise Environment (CNE) Areas
- Noise Measurement Site

